ANNEX D
JACKSON COUNTY

This annex includes jurisdiction-specific information for Jackson County and its participating municipalities. It consists of the following five subsections:

- ❑ D.1 Jackson County Community Profile
- ❑ D.2 Jackson County Risk Assessment
- ❑ D.3 Jackson County Vulnerability Assessment
- ❑ D.4 Jackson County Capability Assessment
- ❑ D.5 Jackson County Mitigation Strategy

D.1 JACKSON COUNTY COMMUNITY PROFILE

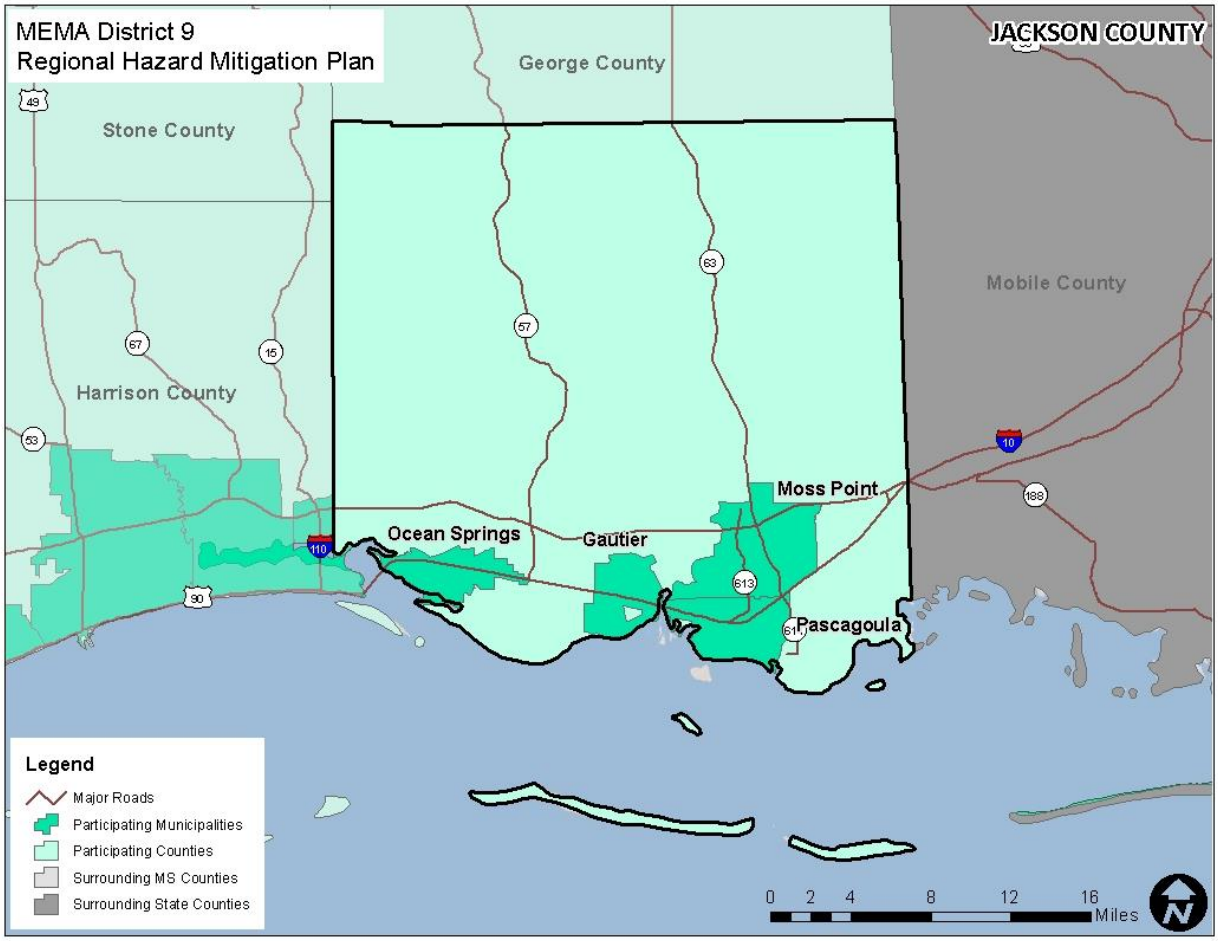
D.1.1 Geography and the Environment

Jackson County is located on the Mississippi coast. It comprises four cities, Gautier, Moss Point, Ocean Springs, and Pascagoula, as well as many small unincorporated communities. An orientation map is provided as **Figure D.1**.

Jackson County is situated in the East Gulf Coastal Plain. It is made up of the gently rolling Pine Belt, also known as the "Piney Woods," and the coastal area called the Coastal Meadows or Terrace. The region has generally low topographic elevations and extensive tracts of marshy land. There are many rivers, creeks, bayous, and other natural drainage networks in the region which empty into the Gulf of Mexico. The total area of the county is 1,043 square miles, 321 square miles of which is water area.

Jackson County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and location along the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Snowfall is rare but does occur. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact. The region is also subject to hurricanes and tropical storms from June to October.

FIGURE D.1: JACKSON COUNTY ORIENTATION MAP



D.1.2 Population and Demographics

According to the 2010 Census, Jackson County has a population of 139,668 people. The county has seen an increase in population between 2000 and 2010, however two municipalities have experienced decline. The population density is 193 people per square mile. Population counts from the U.S. Census Bureau for 1990, 2000, and 2010 for the county and participating jurisdictions are presented in **Table D.1**.

TABLE D.1: POPULATION COUNTS FOR JACKSON COUNTY

Jurisdiction	1990 Census Population	2000 Census Population	2010 Census Population	% Change 2000-2010
Jackson County	**115,243**	**131,420**	**139,668**	**6.3%**
Gautier	10,088	11,681	18,572	59.0%
Moss Point	17,837	15,851	13,704	-13.5%
Ocean Springs	14,658	17,225	17,442	1.3%
Pascagoula	25,899	26,200	22,392	-14.5%

Source: United States Census Bureau, 1990, 2000, 2010 Census

Based on the 2010 Census, the median age of residents of Jackson County is 37.2 years. The racial characteristics of the county are presented in **Table D.2**. Whites make up the majority of the population in the county, accounting for about 72 percent of the population, however the City of Moss Point has a majority black population.

TABLE D.2: DEMOGRAPHICS OF JACKSON COUNTY

Jurisdiction	White, Percent (2010)	Black or African American, Percent (2010)	American Indian or Alaska Native, Percent (2010)	Asian, Percent (2010)	Native Hawaiian or Other Pacific Islander, Percent (2010)	Other Race, Percent (2010)	Two or More Races, percent (2010)	Persons of Hispanic Origin, Percent (2010)*
Jackson County	**72.1%**	**21.5%**	**0.4%**	**2.2%**	**0.1%**	**1.9%**	**1.9%**	**4.6%**
Gautier	61.1%	32.4%	0.5%	1.5%	0.0%	2.2%	2.2%	5.3%
Moss Point	23.9%	73.6%	0.2%	0.4%	0.0%	0.8%	1.1%	1.9%
Ocean Springs	85.4%	7.4%	0.4%	3.1%	0.1%	1.3%	2.2%	4.2%
Pascagoula	58.8%	32.7%	0.3%	1.0%	0.1%	5.4%	1.7%	11.0%

*Hispanics may be of any race, so also are included in applicable race categories
Source: United States Census Bureau, 2010 Census

D.1.3 Housing

According to the 2010 US Census, there are 60,067 housing units in Jackson County, the majority of which are single family homes or mobile homes. Housing information for the county and four municipalities is presented in **Table D.3**. As shown in the table, there is a low percentages of seasonal housing units throughout the county.

TABLE D.3: HOUSING CHARACTERISTICS OF JACKSON COUNTY

Jurisdiction	Housing Units (2000)	Housing Units (2010)	Seasonal Units, Percent (2010)	Median Home Value (2011-2015)
Jackson County	**51,678**	**60,067**	**1.7%**	**$121,200**
Gautier	4,597	8,047	2.4%	$114,500
Moss Point	6,237	6,194	0.6%	$86,900
Ocean Springs	7,072	7,814	1.8%	$146,800
Pascagoula	3,351	10,224	0.7%	$104,400

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

D.1.4 Infrastructure

TRANSPORTATION

In Jackson County, Interstate 10 and U.S. Highway 90 run east to west allowing transportation in southern half of the county. Mississippi Highway 63 and 57 run north-south through Jackson County.

The Trent Lott International Airport and the Ocean Springs Airport are a general aviation and public-use airport, respectively, which are located in Jackson County. The Gulfport-Biloxi International Airport,

located in Harrison County, also serves the county. This airport is served by three major airlines with direct flights to Atlanta, Charlotte, Dallas/Ft. Worth, and Houston as well as connections to hundreds of locations in the U.S. and worldwide.

In terms of other transportation services, Port of Pascagoula operates within the county, connecting it to national and global markets. One Class-I Major and one Class-III Local railways also serve the county.

UTILITIES

Electrical power in Jackson County is mainly provided by electric power associations. Mississippi Power Company also provides power to some parts of the county.

There are two private and municipal natural gas suppliers that serve Jackson County. These include CenterPoint Energy Resources and the City of Pascagoula.

Water and sewer service is provided by a number of different sources including several of the participating cities and the county, but unincorporated areas often rely on septic systems and wells in Jackson County.

COMMUNITY FACILITIES

There are a number of buildings and community facilities located throughout Jackson County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 5 communications facilities, 3 emergency operations centers (EOCs), 45 fire stations, 4 medical facilities, 8 police stations, 1 power/gas facility, 20 private/non-profit facilities, 50 public facilities, 75 schools, 7 shelters, 27 special populations facilities, 3 transportation facilities, and 25 water/wastewater facilities located within the county.

There are two hospitals located in Jackson County. These include Singing River Hospital in Pascagoula and Ocean Springs Hospital in Ocean Springs. There are also additional medical care facilities located in the county as outlined in the vulnerability assessment (Section 6.4.1).

Jackson County contains numerous local, state, and national parks and recreation areas, including the Gulf Islands National Seashore, Mississippi Gulf Coast National Heritage Area, DeSoto National Forest, and Shepard State Park. Golf courses and resorts, recreational and sports fishing, gamming and casinos, and sand beaches are abundant in the county.

D.1.5 Land Use

Many areas of Jackson County are undeveloped or sparsely developed. There are several incorporated municipalities located along the coast. Coastal land use patterns radiate from city centers and commercial land uses are located in central business districts and highway strips, with surrounding housing that becomes progressively large in lot size and floor area with distance from the central business districts. Residential and non-residential densities are generally low, and concentrated mix of uses are infrequent, creating an auto-oriented land use pattern along the coast. Upland land use patterns differ markedly from the coastal plain. There are only a few municipalities and unincorporated rural centers. There is a mix of protected lands, such as the DeSoto National Forest and several National Wildlife Refuges. Private lands

are used for exurban housing, agriculture, and forestry. Consistent with its rural character, densities are very low and uses are not mixed, making motor vehicles the only viable mode for virtually all travel.

Local land use and associated regulations are further discussed in *Section 7: Capability Assessment.*

D.1.6 Employment and Industry

According to the 2011 to 2015 American Community Survey (ACS) 5-year estimates, in 2015, Jackson County had an average annual employment of 58,824 workers and an average unemployment rate of 9.1 percent (compared to 10.3 percent for the state). In 2015, the Educational Services, and Health Care and Social Assistance industry employed 20.2 percent of the workforce. Manufacturing was the second largest industry, employing 18.8 percent of workers, followed by Arts, Entertainment, and Recreation, and Accommodation and Food Services (15.4%) and Retail Trade (10.6%). In 2015, the average annual median household income in Jackson County was $48,406 compared to $39,665 in the state of Mississippi.

D.2 JACKSON COUNTY RISK ASSESSMENT

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Jackson County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

FLOOD-RELATED HAZARDS

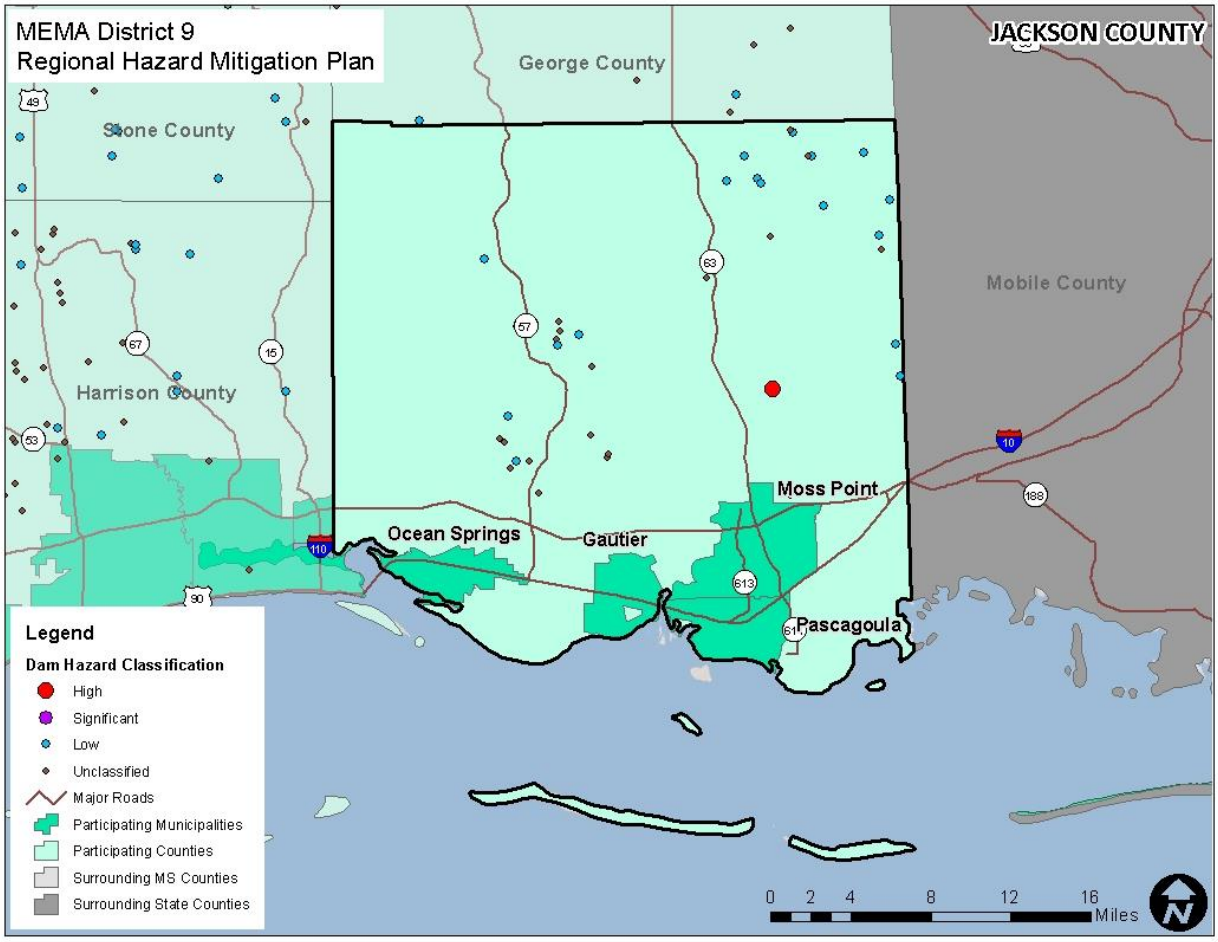
D.2.1 Dam and Levee Failure

LOCATION AND SPATIAL EXTENT

According to the Mississippi Department of Environmental Quality, there is one high hazard dam in Jackson County.[1] **Figure D.2** and **Figure D.3** show the location of this high hazard dam as well as mapped dam inundation areas, and **Table D.4** lists it by name.

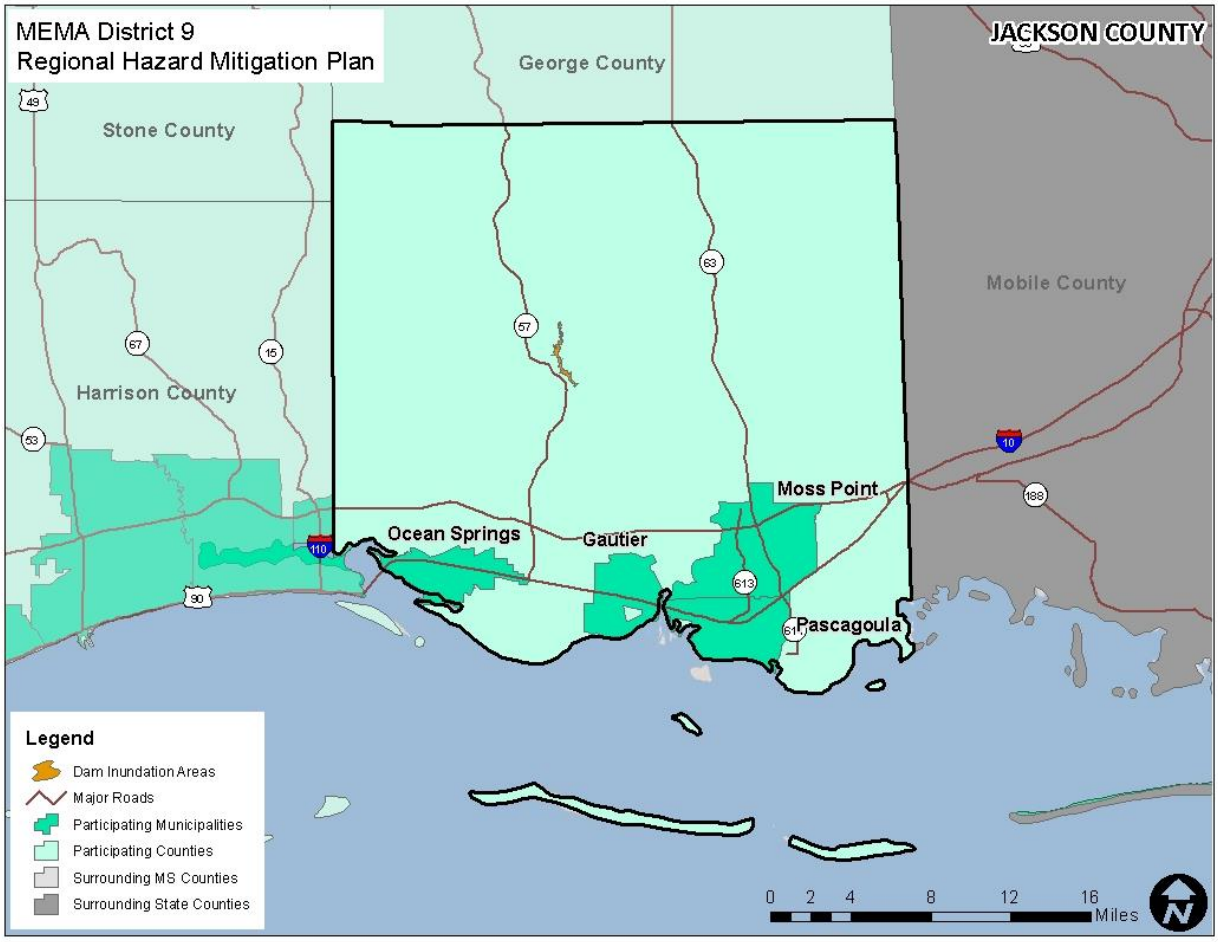
[1] The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE D.2: JACKSON COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

FIGURE D.3: JACKSON COUNTY DAM INUNDATION AREAS



Source: Mississippi Department of Environmental Quality

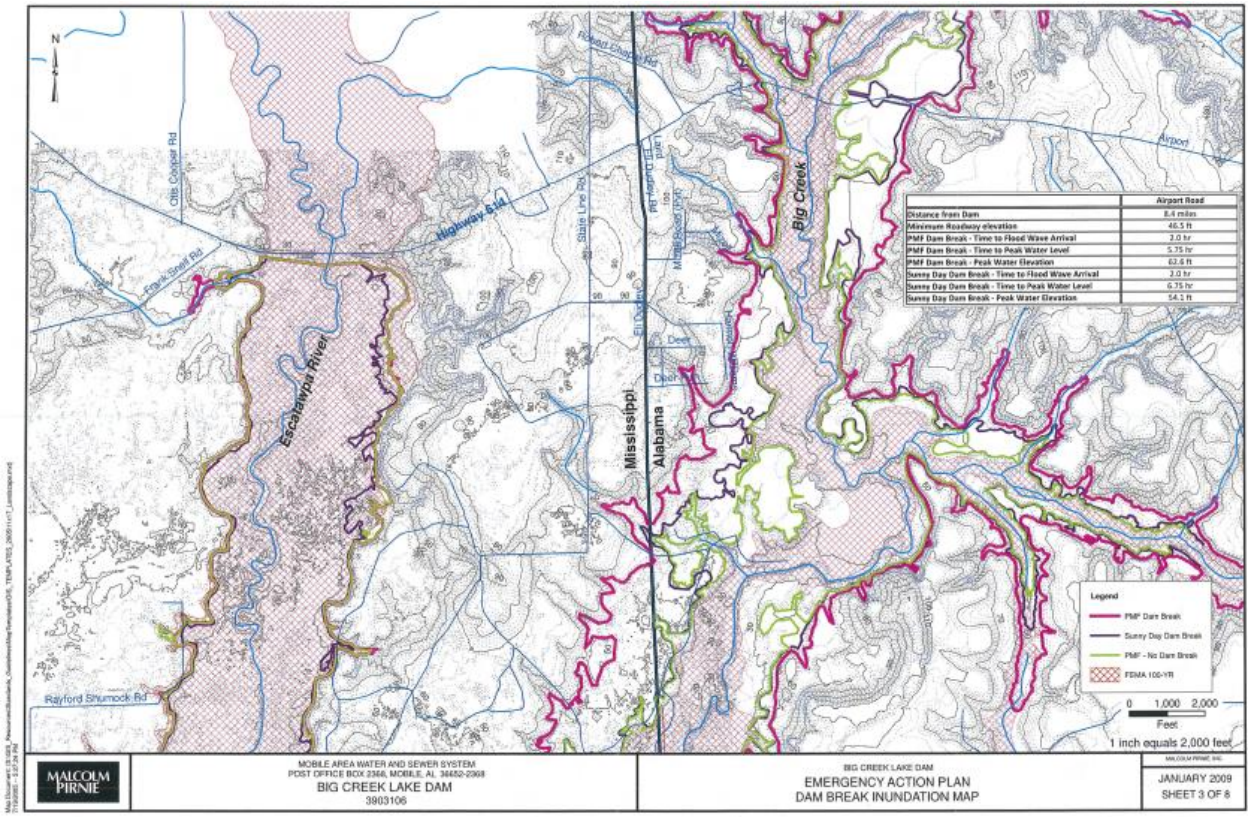
TABLE D.4: JACKSON COUNTY HIGH HAZARD DAMS

Dam Name	Hazard Potential
Jackson County	
BLACK CREEK COOLING WATER DAM	High

Source: Mississippi Department of Environmental Quality

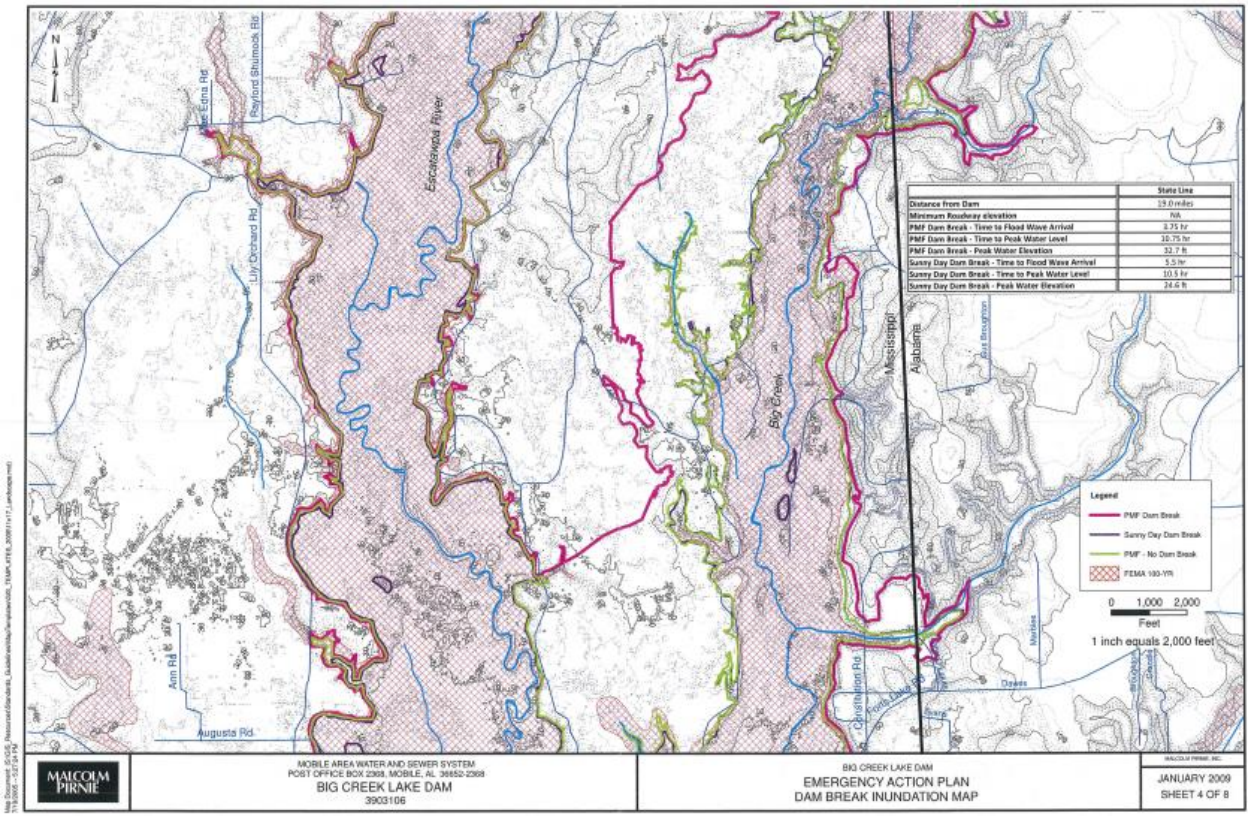
Additionally, although it is technically outside the State of Mississippi, the Big Creek Lake Dam in Alabama poses a potential risk to some areas in eastern Jackson County and has been identified as the greatest threat in terms of dam failure in the county. The Emergency Action Plan for this dam provides probable maximum flood areas in both Alabama and Mississippi, demonstrating potential areas at risk in several scenarios including dam break, sunny day dam break, and no dam break. This mapping is found in **Figure D.4**, **Figure D.5**, **Figure D.6**, **Figure D.7**, **Figure D.8**, and **Figure D.9.**

FIGURE D.4: BIG CREEK LAKE DAM FAILURE SCENARIOS



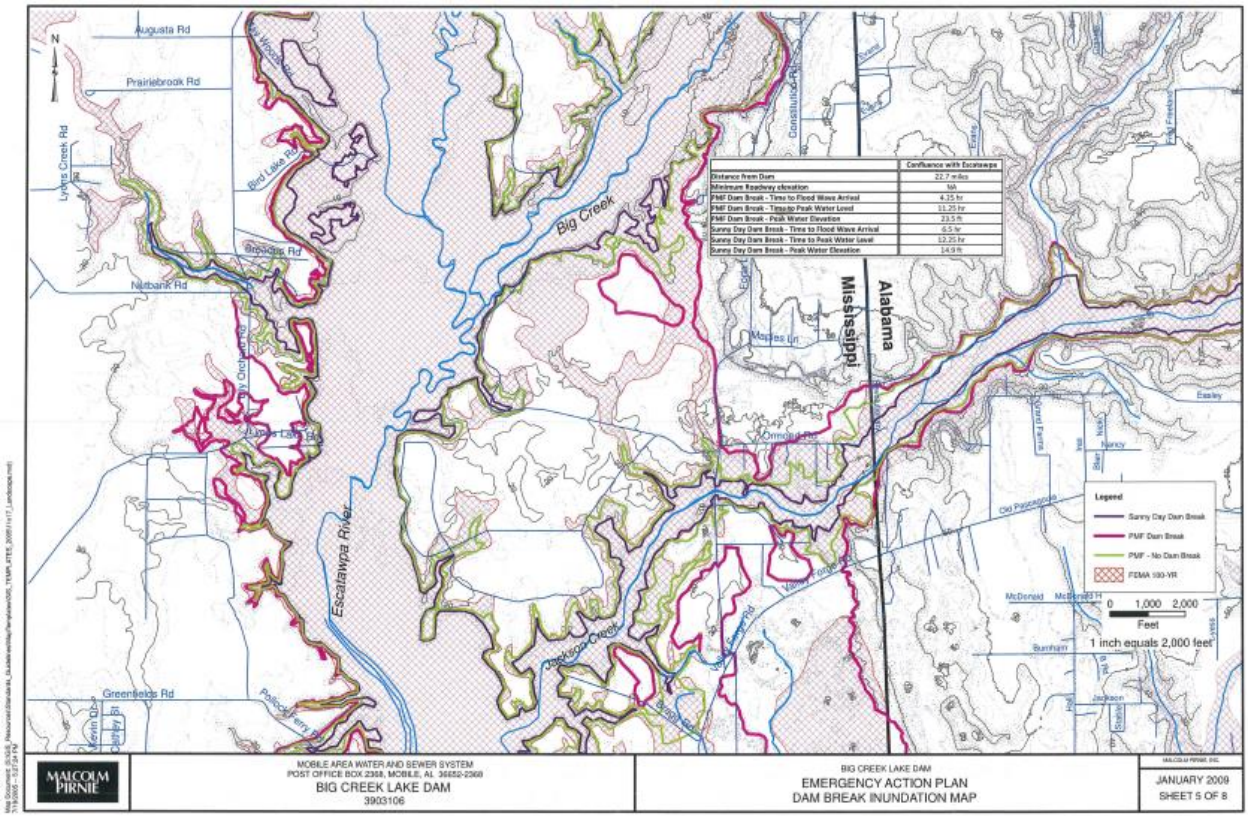
Source: Big Creek Lake Dam Emergency Action Plan

FIGURE D.5: BIG CREEK LAKE DAM FAILURE SCENARIOS



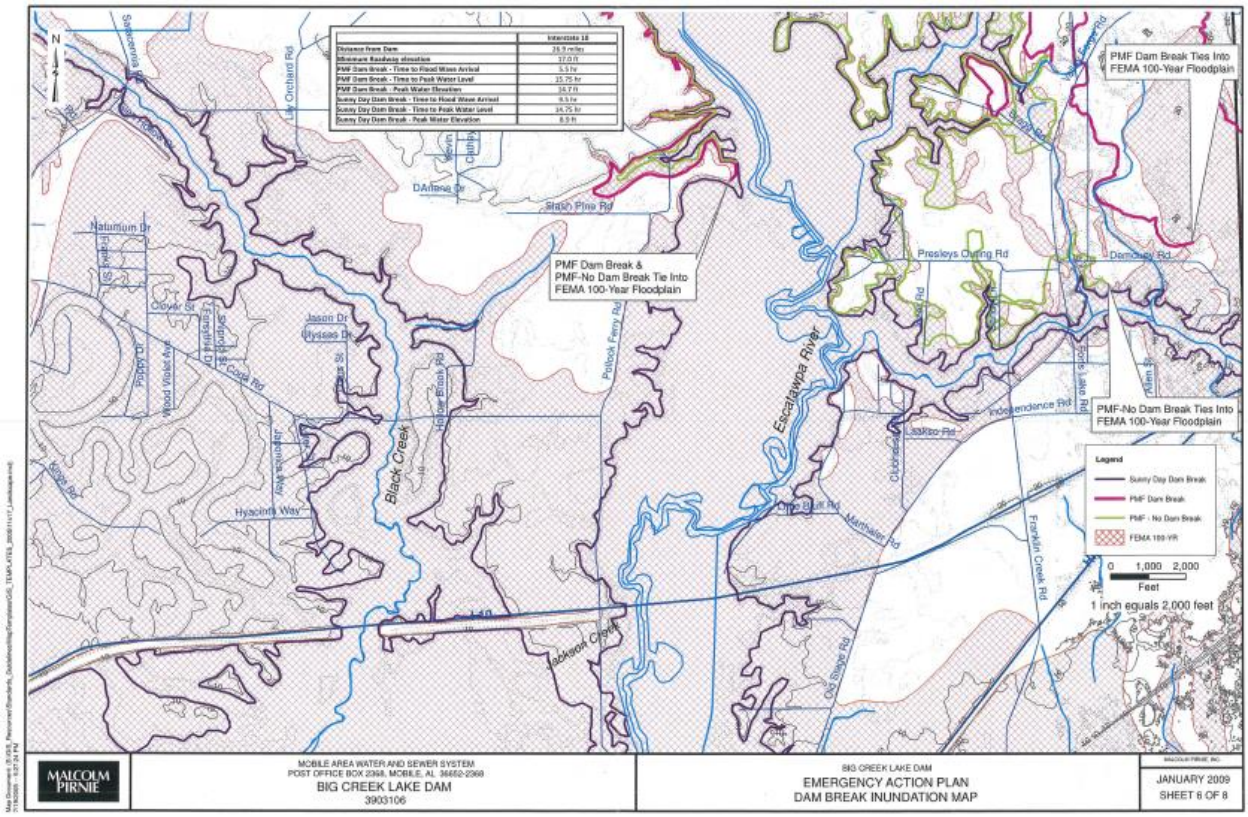
Source: Big Creek Lake Dam Emergency Action Plan

FIGURE D.6: BIG CREEK LAKE DAM FAILURE SCENARIOS



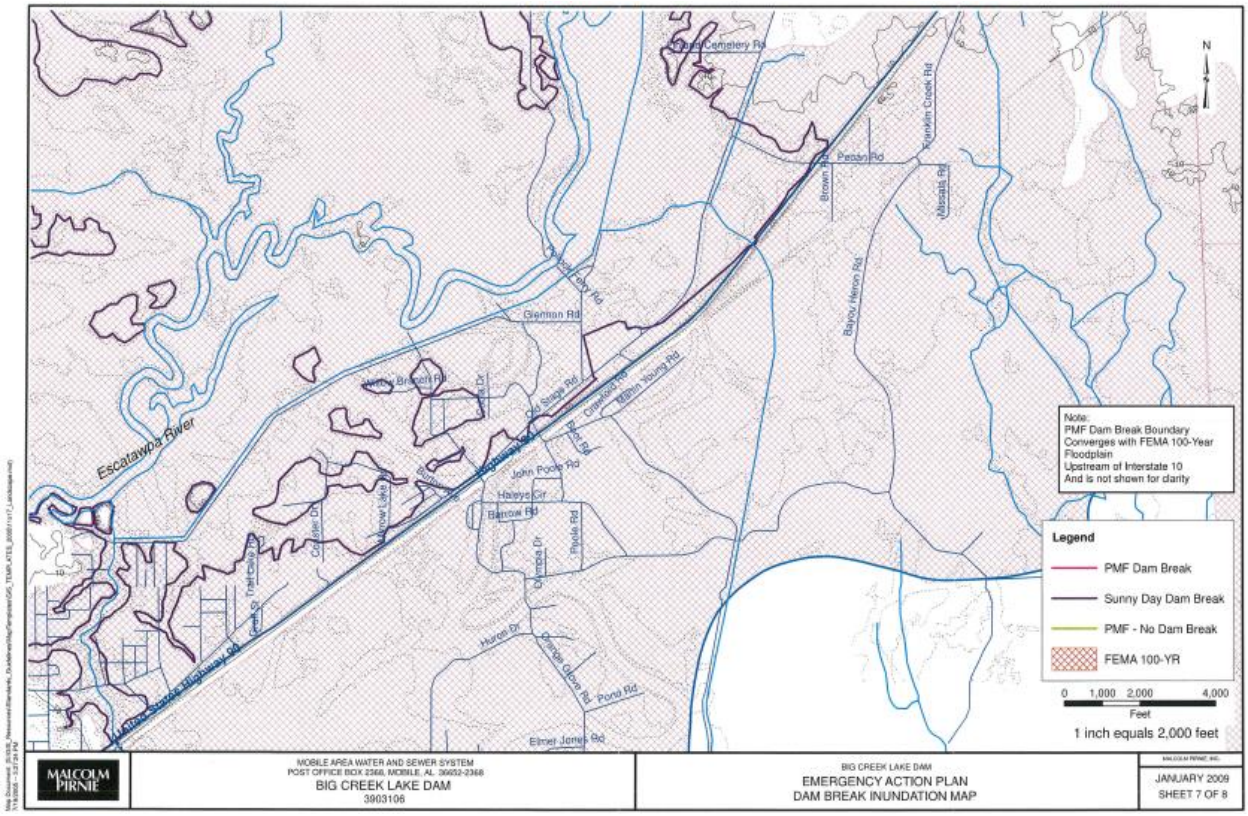
Source: Big Creek Lake Dam Emergency Action Plan

FIGURE D.7: BIG CREEK LAKE DAM FAILURE SCENARIOS



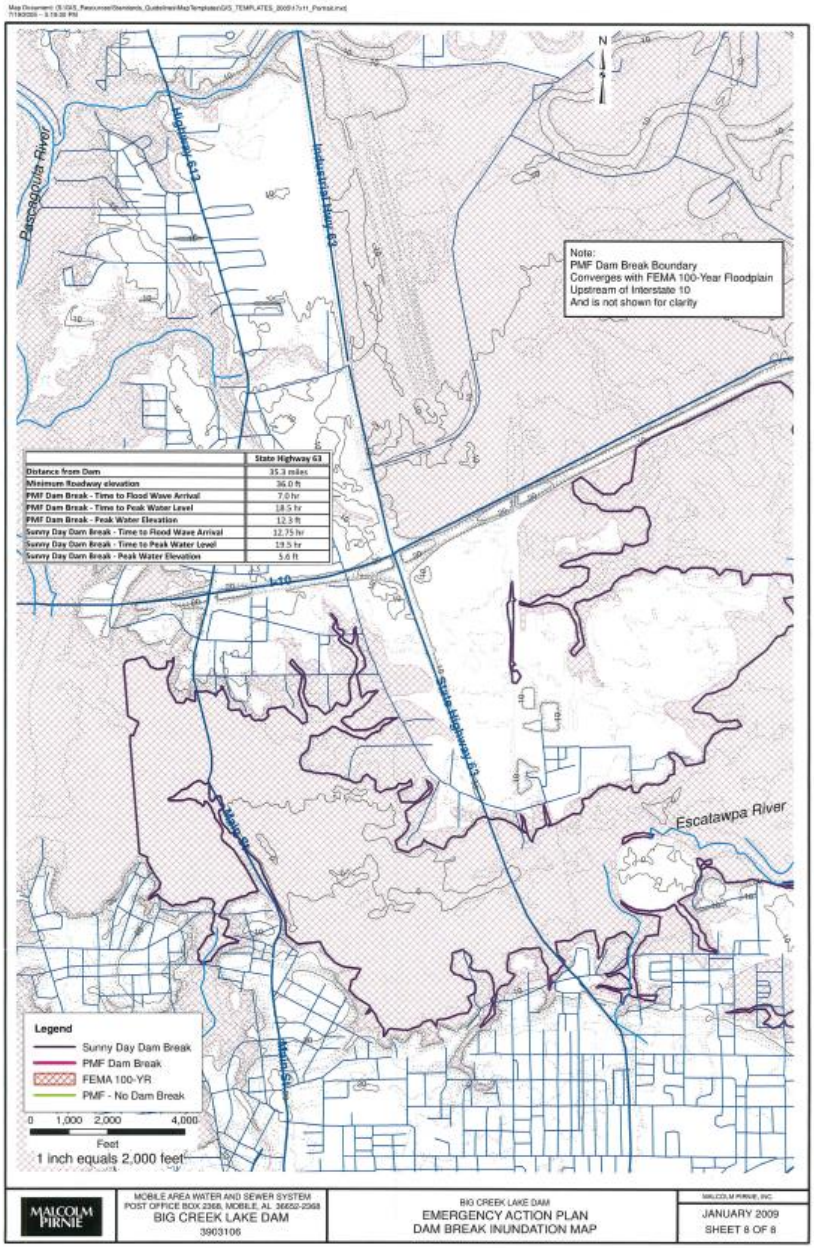
Source: Big Creek Lake Dam Emergency Action Plan

FIGURE D.8: BIG CREEK LAKE DAM FAILURE SCENARIOS



Source: Big Creek Lake Dam Emergency Action Plan

FIGURE D.9: BIG CREEK LAKE DAM FAILURE SCENARIOS



Source: Big Creek Lake Dam Emergency Action Plan

HISTORICAL OCCURRENCES

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Jackson County (**Table D.5)**. However, several breach scenarios in the region could be catastrophic.

TABLE D.5: JACKSON COUNTY DAM FAILURES (1982-2012)

Date	County	Structure Name	Cause of Failure
None reported	Jackson	--	--

Source: Mississippi State Hazard Mitigation Plan

PROBABILITY OF FUTURE OCCURRENCES

Given the current dam inventory and historic data, a dam breach is possible (between 1 and 10 percent annual probability) in the future. However, as has been demonstrated in the past, regular monitoring is necessary to prevent these events.

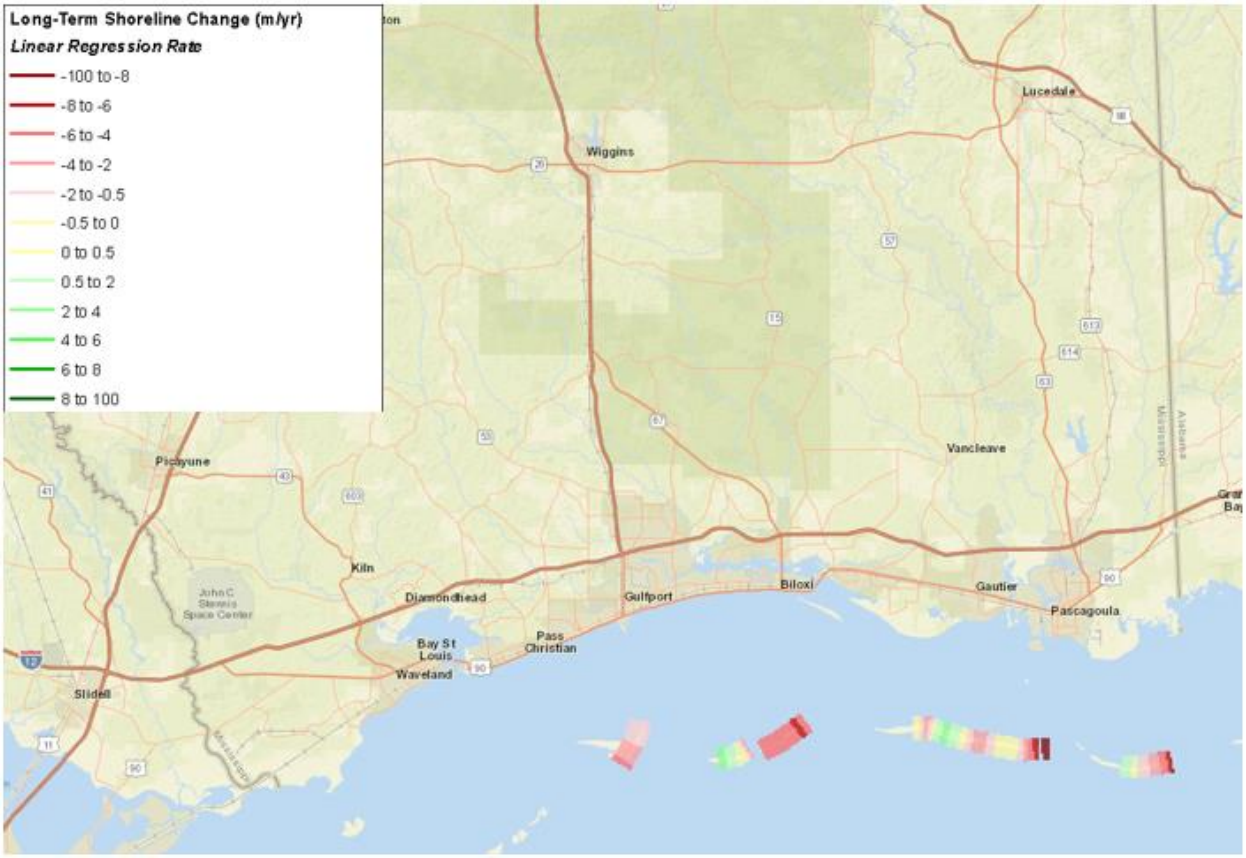
D.2.2 Erosion

LOCATION AND SPATIAL EXTENT

For the most part, major erosion in Jackson County is typically caused by coastal tides, ocean currents, and storm events. Although the county also experiences riverine erosion in many of its inland areas, these are of somewhat less concern than coastal erosion areas which historically have had larger impacts. Unlike inland areas, where the soil has greater organic matter content, coastal soils are mainly composed of fine grained particles such as sand. This makes coastal soils much more susceptible to erosion. Although some areas of the Jackson County coast are protected and natural erosion processes are allowed to take place for the most part, many areas near where development has occurred are especially susceptible.

At this time, there is limited data available on localized areas of erosion. Most of the information collected by the United States Geological Survey (USGS) is focused on the barrier islands that are just off the coast of the mainland. The long-term shoreline change for the barrier islands as calculated by the USGS can be found in **Figure D.10** It should be noted that many areas of the coast are protected through the use of structural techniques. Also, a great deal of renourishment activities are carried out along the mainland coastal communities.

FIGURE D.10: LONG-TERM SHORELINE CHANGE (M/YR) IN THE MEMA DISTRICT 9 REGION



Source: United States Geological Survey

HISTORICAL OCCURRENCES

Several sources were vetted to identify areas of erosion in Jackson County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. Because dramatic, short-term erosion tends to take place after major storm events such as hurricanes, flooding, or storm surge, the erosion events often correspond directly with those events. Conversely, with long-term erosion, it is difficult to identify a specific historic occurrence because these events are by nature occurring at all times over a long period at a very gradual rate. Therefore, long-term historic erosion events cannot be confined to a specific timeframe or occurrence.

PROBABILITY OF FUTURE OCCURRENCES

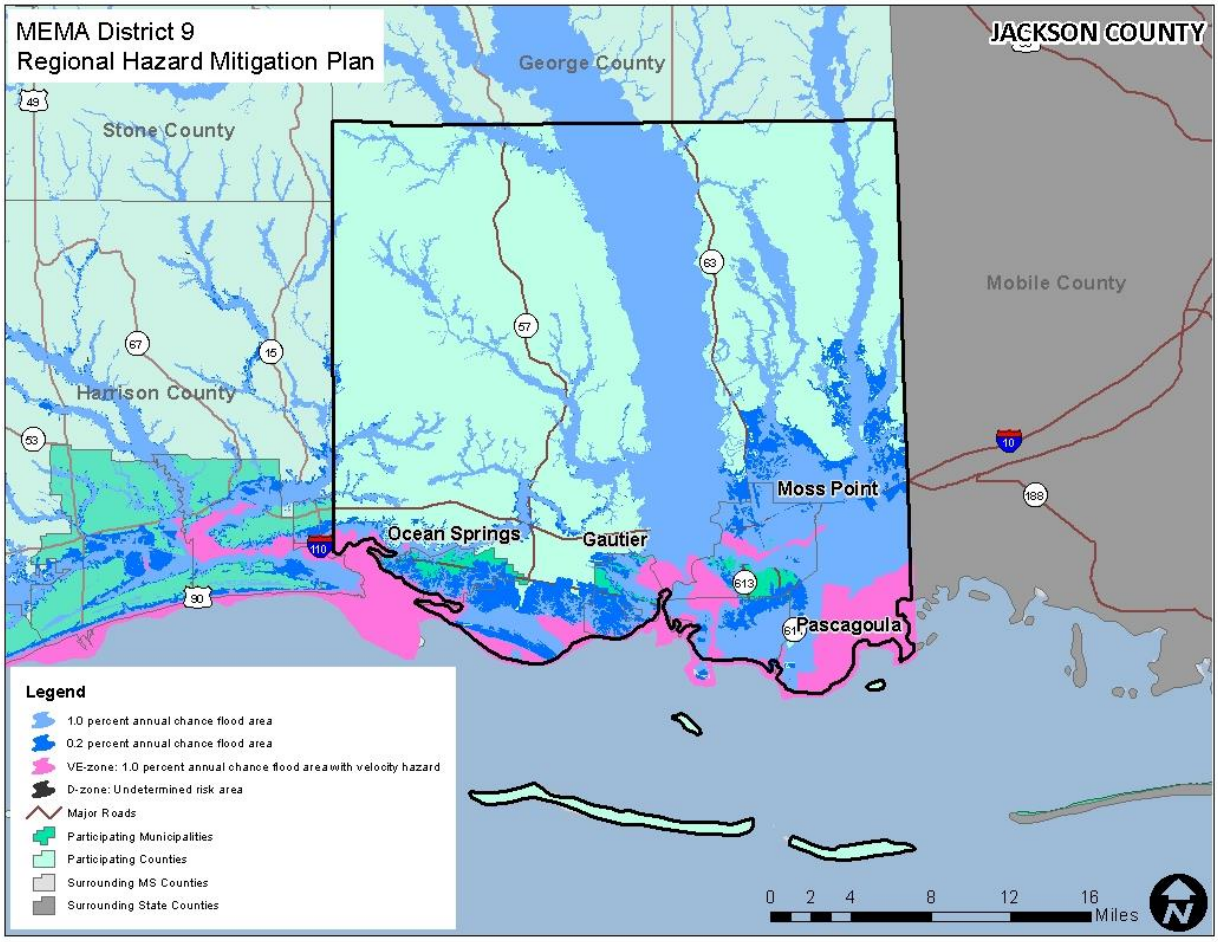
Erosion remains a natural, dynamic, and continuous process for Jackson County, and it will continue to occur. The annual probability level assigned for erosion is likely (between 10 and 100 percent annually).

D.2.3 Flood

LOCATION AND SPATIAL EXTENT

There are areas in Jackson County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM). This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), Zone VE (1-percent annual chance floodplain with additional hazards due to storm-induced velocity wave action), Zone X500 (0.2-percent annual chance floodplain), and Zone D (undetermined risk area). **Figure D.11** illustrates the location and extent of currently mapped special flood hazard areas for the county based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

FIGURE D.11: SPECIAL FLOOD HAZARD AREAS IN JACKSON COUNTY



Source: Federal Emergency Management Agency

HISTORICAL OCCURRENCES

Floods were at least partially responsible for five disaster declarations in Jackson County in 1974, 1980, 1990, 1995 and 2009.[2] Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 25 events in Jackson County since 1996.[3] These events accounted for almost $4.1 million (2016 dollars) in property damage.[4] A summary of these events is presented in **Table D.6**. Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table D.7**.

TABLE D.6: SUMMARY OF FLOOD OCCURRENCES IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	0	0/0	$0	$0
Moss Point	2	0/0	$1,325,787	$94,699
Ocean Springs	2	0/0	$0	$0
Pascagoula	4	0/0	$128,387	$9,171
Unincorporated Area	17	0/0	$2,616,915	$130,846
JACKSON COUNTY TOTAL	**25**	**0/0**	**$4,071,089**	**$234,715**

Source: National Climatic Data Center

TABLE D.7: HISTORICAL FLOOD EVENTS IN JACKSON COUNTY

Location	Date	Type	Deaths/Injuries	Property Damage*
Gautier				
None reported	--	--	--	--
Moss Point				
MOSS PT	8/5/2002	Flash Flood	0/0	$66,941
JACKSON CO ARPT	8/30/2012	Flash Flood	0/0	$1,258,846
Ocean Springs				
OCEAN SPGS	4/6/2005	Flash Flood	0/0	$0
OCEAN SPGS	4/29/2014	Flash Flood	0/0	$0
Pascagoula				
PASCAGOULA	6/20/2002	Flood	0/0	$0
PASCAGOULA	8/9/2006	Heavy Rain	0/0	$0
PASCAGOULA	9/3/2011	Flash Flood	0/0	$26,769
PASCAGOULA	9/27/2015	Flash Flood	0/0	$101,618
Unincorporated Area				
PECAN	4/15/1996	Flash Flood	0/0	$0
SOUTH PORTION	7/8/1996	Flood	0/0	$153,507
COUNTYWIDE	1/7/1998	Flash Flood	0/0	$73,881

[2] A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.
[3] These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through June 2016. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.
[4] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

Location	Date	Type	Deaths/Injuries	Property Damage*
COUNTYWIDE	3/7/1998	Flash Flood	0/0	$0
JACKSON (ZONE)	3/8/1998	Flood	0/0	$0
COUNTYWIDE	6/11/2001	Flash Flood	0/0	$203,997
JACKSON (ZONE)	7/1/2003	Flood	0/0	$130,898
COUNTYWIDE	3/31/2005	Heavy Rain	0/0	$0
COUNTYWIDE	4/1/2005	Flash Flood	0/0	$246,649
JACKSON (ZONE)	4/1/2005	Flood	0/0	$246,649
ORANGE GROVE	3/28/2009	Flash Flood	0/0	$0
NORTH BILOXI ARPT	9/22/2009	Flash Flood	0/0	$0
OCEAN SPGS ARPT	9/5/2012	Flash Flood	0/0	$10,490
OCEAN SPGS ARPT	9/5/2012	Flash Flood	0/0	$0
ARENA	2/25/2013	Flash Flood	0/0	$0
VANCLEAVE	5/1/2013	Flash Flood	0/0	$1,550,842
JACKSON (ZONE)	10/25/2015	Coastal Flood	0/0	$0

*Property damage is reported in 2016 dollars; all damage may not have been reported.
Source: National Climatic Data Center

HISTORICAL SUMMARY OF INSURED FLOOD LOSSES

According to FEMA flood insurance policy records as of October 2016, there have been 8,963 flood losses reported in Jackson County through the National Flood Insurance Program (NFIP) since 1978, totaling almost $699.3 million in claims payments. A summary of these figures for the county is provided in **Table D.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Jackson County were either uninsured, denied claims payment, or not reported.

TABLE D.8: SUMMARY OF INSURED FLOOD LOSSES IN JACKSON COUNTY

Location	Number of Policies	Flood Losses	Claims Payments
Gautier	1,724	681	$59,663,535
Moss Point	1,131	886	$28,225,055
Ocean Springs	2,622	823	$86,224,366
Pascagoula	4,944	2,763	$221,292,452
Unincorporated Area	5,996	3,810	$303,874,274
JACKSON COUNTY TOTAL	**16,417**	**8,963**	**$699,279,682**

Source: National Flood Insurance Program

REPETITIVE LOSS PROPERTIES

According to the Mississippi Emergency Management Agency, there are 1,259 non-mitigated repetitive loss properties located in Jackson County, which accounted for 3,142 losses and over $175.6 million in claims payments under the NFIP. The average claim amount for these properties is $55,891. Of the 1,259 properties, 1,150 are single family, 9 are 2-4 family, 15 are assumed condominium, 23 are other residential, and 62 are non-residential. Without mitigation, these properties will likely continue to

experience flood losses. **Table D.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Jackson County.

TABLE D.9: REPETITIVE LOSS PROPERTIES IN JACKSON COUNTY

Location	Number of Properties	Types of Properties	Number of Losses	Building Payments	Content Payments	Total Payments	Average Payment
Gautier	147	135 single family; 4 assumed condo; 1 other residential; 7 non-residential	335	$16,568,956	$5,576,243	$22,145,199	$66,105
Moss Point	186	178 single family; 1 assumed condo; 7 non-residential	483	$12,142,035	$2,958,376	$15,100,411	$31,264
Ocean Springs	50	44 single family; 1 2-4 family; 1 assumed condo; 1 other residential; 3 other non-residential	135	$13,249,569	$2,042,105	$15,291,674	$113,272
Pascagoula	516	450 single family; 8 2-4 family; 7 assumed condo; 19 other residential; 32 other non-residential	1,219	$56,849,172	$18,164,235	$75,013,407	$61,537
Unincorporated Area	360	343 single family; 2 assumed condo; 2 other residential; 13 other non-residential	970	$37,493,776	$10,564,551	$48,058,327	$49,545
JACKSON COUNTY TOTAL	**1,259**		**3,142**	**$136,303,508**	**$39,305,510**	**$175,609,018**	**$55,891**

Source: Federal Emergency Management Agency, National Flood Insurance Program

PROBABILITY OF FUTURE OCCURRENCES

Flood events will remain a threat in Jackson County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above**,** which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain) and the 0.2-percent annual chance flood (500-year floodplain). Further, as described in other hazard profiles, it is highly likely that Jackson County will continue to experience inland flooding associated with large tropical storms and hurricanes.

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, the eastern half of the county has more floodplain and thus a higher risk of flood than the rest of the county. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

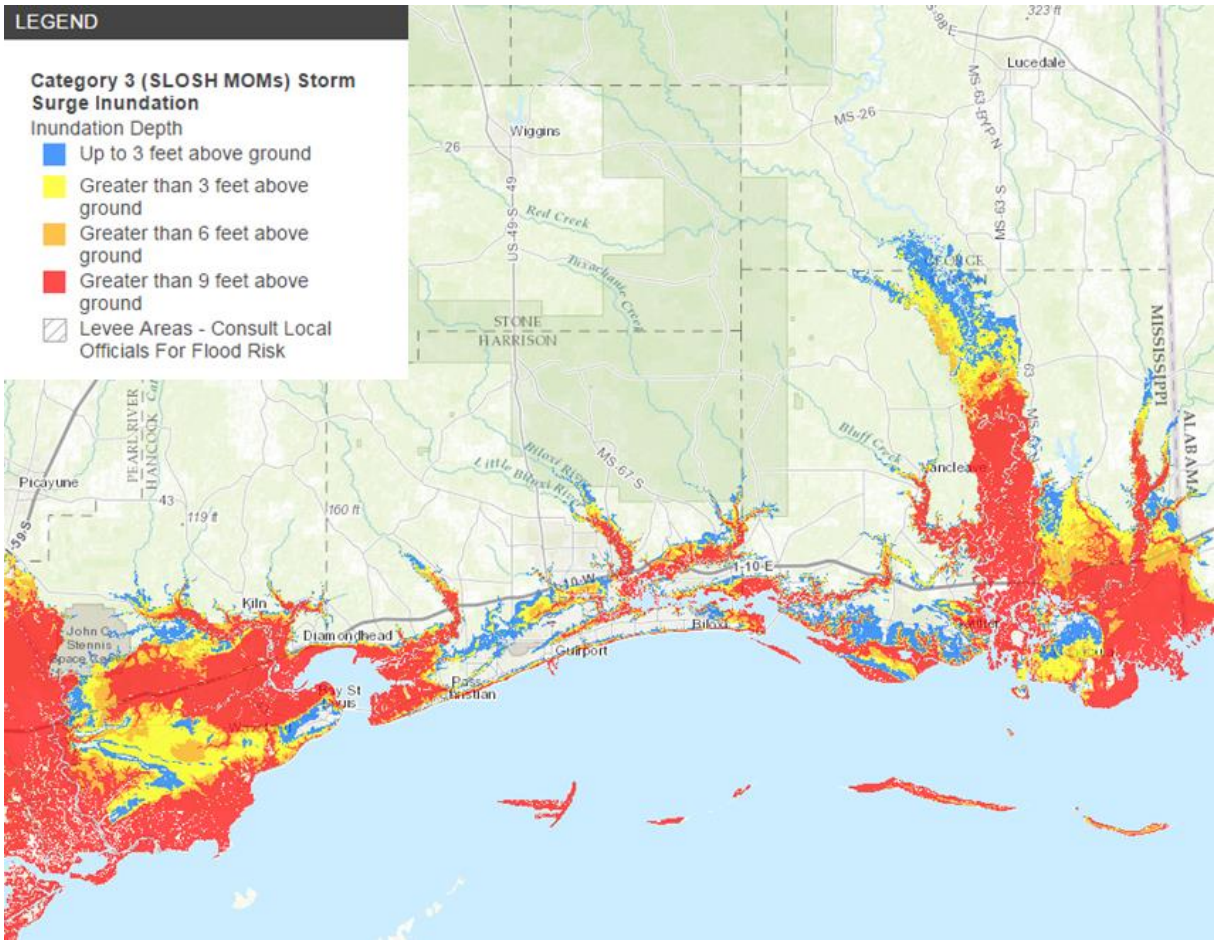
It should also be noted that anticipated sea level rise will increase the probability and intensity of future tidal flooding events in years to come. Rising sea level over time will shorten the return period (increasing the frequency) of significant flood events. This hazard is discussed elsewhere in this section.

D.2.4 Storm Surge

LOCATION AND SPATIAL EXTENT

There are many areas in Jackson County that are subject to potential storm surge inundation as modeled and mapped by the National Oceanic and Atmospheric Administration (NOAA). **Figure D.12** illustrates hurricane storm surge inundation zones based on a Category 3 storm. The illustration is derived from geo-referenced SLOSH (Sea, Lake, and Overland Surge from Hurricanes) data produced by the USACE in coordination with NOAA. SLOSH is a modeling tool used to estimate storm surge for coastal areas resulting from historical, hypothetical, or predicted hurricanes taking into account maximum expected levels for pressure, size, forward speed, track, and winds. Therefore, the SLOSH data is best used for defining the potential maximum surge associated with various storm intensities for any particular location. As shown in the figure, the entire coast and central portion of Jackson County is at high risk to storm surge inundation. Inland areas may also experience substantial flooding during a storm event.

FIGURE D.12: STORM SURGE RISK AREAS IN THE MEMA DISTRICT 9 REGION



Source: NOAA

HISTORICAL OCCURRENCES

According to the National Climatic Data Center, nine storm surge events have been reported for Jackson County since 1998.[5] These events accounted for almost $2.8 billion (2016 dollars) in property damage.[6] A summary of these events is presented in **Table D.10**. Detailed information on the recorded storm surge events can be found in **Table D.11**.

TABLE D.10: SUMMARY OF STORM SURGE EVENTS IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	0	0/0	$0	$0
Moss Point	0	0/0	$0	$0
Ocean Springs	1	0/0	$369,406	$20,523
Pascagoula	0	0/0	$0	$0

[5] These storm surge events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through June 2016. It is likely that additional storm surge conditions have affected Jackson County.
[6] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Unincorporated Area	8	0/0	$2,778,107,544	$213,721,103
JACKSON COUNTY TOTAL	**9**	**0/0**	**$2,778,476,950**	**$213,721,103**

Source: National Climatic Data Center

TABLE D.11: HISTORICAL STORM SURGE EVENTS IN JACKSON COUNTY

Location	Date	Magnitude	Deaths/Injuries	Property Damage*
Gautier				
None reported	--	--	--	--
Moss Point				
None reported	--	--	--	--
Ocean Springs				
OCEAN SPGS	2/15/1998	2-4 feet above normal	0/0	$369,406
Pascagoula				
None reported	--	--	--	--
Unincorporated Area				
JACKSON (ZONE)	6/30/2003	--	0/0	$369,406
JACKSON (ZONE)	9/15/2004	3-5 feet above normal	0/0	$327,246
JACKSON (ZONE)	7/5/2005	3-5 feet above normal	0/0	$1,530,035
JACKSON (ZONE)	8/29/2005	17-21 feet	0/0	$246,649
JACKSON (ZONE)	9/1/2008	4.5-6 feet	0/0	$2,774,804,148
JACKSON (ZONE)	9/11/2008	2-4 feet above normal	0/0	$559,335
JACKSON (ZONE)	9/2/2011	2-4 feet above normal	0/0	$0
JACKSON (ZONE)	8/28/2012	5 feet	0/0	$10,707

*Property damage is reported in 2016 dollars; all damage may not have been reported.
Source: National Climatic Data Center

PROBABILITY OF FUTURE OCCURRENCES

It is highly likely (100 percent annual probability) that Jackson County will continue to experience storm surge associated with large tropical storms, hurricanes, and squalls combined with high tides. As noted in the preceding section (under Flood), anticipated sea level rise will increase the probability and intensity of future storm surge events in years to come.[7] This rise in sea level will not only increase the probability and intensity of tidal flooding events, but will also contribute to the loss of coastal wetlands and erosion of sand beaches that act as protective buffers against storm surge events.

FIRE-RELATED HAZARDS

D.2.5 Drought

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Jackson County would be uniformly exposed to drought, making the

[7] The Sea Level Rise hazard is assessed more extensively under Section D.2.16.

spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

HISTORICAL OCCURRENCES

According to the U.S. Drought Monitor, Jackson County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-October 2016). **Table D.12** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

TABLE D.12: HISTORICAL DROUGHT OCCURRENCES IN JACKSON COUNTY

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)

	Jackson County
2000	EXCEPTIONAL
2001	MODERATE
2002	SEVERE
2003	ABNORMAL
2004	MODERATE
2005	ABNORMAL
2006	EXTREME
2007	MODERATE
2008	ABNORMAL
2009	MODERATE
2010	SEVERE
2011	EXCEPTIONAL
2012	SEVERE
2013	MODERATE
2014	SEVERE
2015	MODERATE
2016	MODERATE

Source: United States Drought Monitor

No anecdotal information was available from the National Climatic Data Center on droughts in Jackson County.

PROBABILITY OF FUTURE OCCURRENCES

Based on historical occurrence information, it is assumed that Jackson County has a probability level of likely (between 10 and 100 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

D.2.6 Lightning

LOCATION AND SPATIAL EXTENT

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Jackson County is uniformly exposed to lightning.

HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there have been 18 recorded lightning events in Jackson County since 1996.[8] These events resulted in almost $336,000 (2016 dollars) in damages.[9] Furthermore, lightning has caused one fatality and three injuries in the county. A summary of these events is presented in **Table D.13**. Detailed information on historical lightning events can be found in **Table D.14**.

It is certain that more than 18 events have impacted the county. Many of the reported events are those that caused damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

TABLE D.13: SUMMARY OF LIGHTNING OCCURRENCES IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	0	0/0	$0	$0
Moss Point	1	0/0	$2,678	$191
Ocean Springs	4	0/0	$89,747	$4,487
Pascagoula	8	1/3	$30,557	$1,698
Unincorporated Area	5	0/0	$212,656	$10,633
JACKSON COUNTY TOTAL	**18**	**1/3**	**$335,638**	**$17,009**

Source: National Climatic Data Center

TABLE D.14: HISTORICAL LIGHTNING OCCURRENCES IN JACKSON COUNTY

Location	Date	Deaths/ Injuries	Property Damage*	Details
Gautier				
None reported	--	--	--	--
Moss Point				
MOSS PT	8/2/2002	0/0	$2,678	Lightning struck a power pole and transformer.
Ocean Springs				
OCEAN SPGS	4/29/1996	0/0	$6,140	Lightning struck an electric meter and caused a house fire.

[8] These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through June 2016. It is certain that additional lightning events have occurred in Jackson County. As additional local data becomes available, this hazard profile will be amended.

[9] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

Location	Date	Deaths/ Injuries	Property Damage*	Details
OCEAN SPGS	9/21/1996	0/0		Lightning damaged several transformers setting the utility poles on fire.
OCEAN SPGS	6/7/2001	0/0	$81,599	A lightning strike killed a 25 year old women in Gulfport shortly after lightning injured a 53 year old man in the nearby community of Pass Christian. Lightning also started a fire at a business in Oceans Springs which resulted in $60,000 damage.
OCEAN SPGS	8/2/2002	0/0	$2,008	A lightning strike caused a fire in an exterior wall of a house.
Pascagoula				
PASCAGOULA	3/5/1998	0/0	$0	Lightning struck and sheared off a 60-foot utility pole resulting in an extensive power outage, up to 7 hours, in Pascagoula, Ocean Springs and Gautier.
PASCAGOULA	5/6/1998	0/0	$29,553	Lightning struck a restaurant and office building causing damage to computers and other equipment.
PASCAGOULA	8/2/2002	0/0	$1,004	A lightning strike damaged some of the electrical outlets in a house.
PASCAGOULA	8/2/2002	0/0	$0	Lightning struck a gas meter.
PASCAGOULA	8/2/2002	0/0	$0	Lightning struck an antenna on a house.
PASCAGOULA	8/2/2003	0/0	$0	Lightning ignited a fire of a tank containing 350,000 barrels of crude oil at an oil refinery.
PASCAGOULA	6/28/2004	0/3	$0	Three people were struck by lightning at a ship yard. One person was transported to a hospital and suffered burns on his face and hands and a broken jaw.
PASCAGOULA	7/31/2011	1/0	$0	Broadcast media reported that a person was struck and killed by lightning while on the pier at Pascagoula Beach Pier.
Unincorporated Area				
ESCATAWPA	6/7/1996	0/0	$153,507	A lightning strike started a fire which destroyed a house.
ESCATAWPA	7/5/1998	0/0	$14,776	Lightning hit a church blowing out most of the lights, destroying the security system, and cracking windows.
VANCLEAVE	7/21/2003	0/0	$32,725	Lightning caused a fire that damaged the roof of a house.
VANCLEAVE	7/21/2003	0/0	$1,309	A lightning strike at a gas station caused minor damage.
HURLEY	7/12/2013	0/0	$10,339	Lightning strikes damaged 5 golf carts, 3 chargers and a sprinkler system at Whispering Pines Golf Course in Hurley.

*Property damage is reported in 2016 dollars; All damage may not have been reported.
Source: National Climatic Data Center

PROBABILITY OF FUTURE OCCURRENCES

Although there was not a high number of historical lightning events reported in Jackson County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), Jackson County is located in an area of the country that experienced

an average of 4 to 12 and up lightning flashes per square kilometer per year between 2005 and 2014. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

D.2.7 Wildfire

LOCATION AND SPATIAL EXTENT

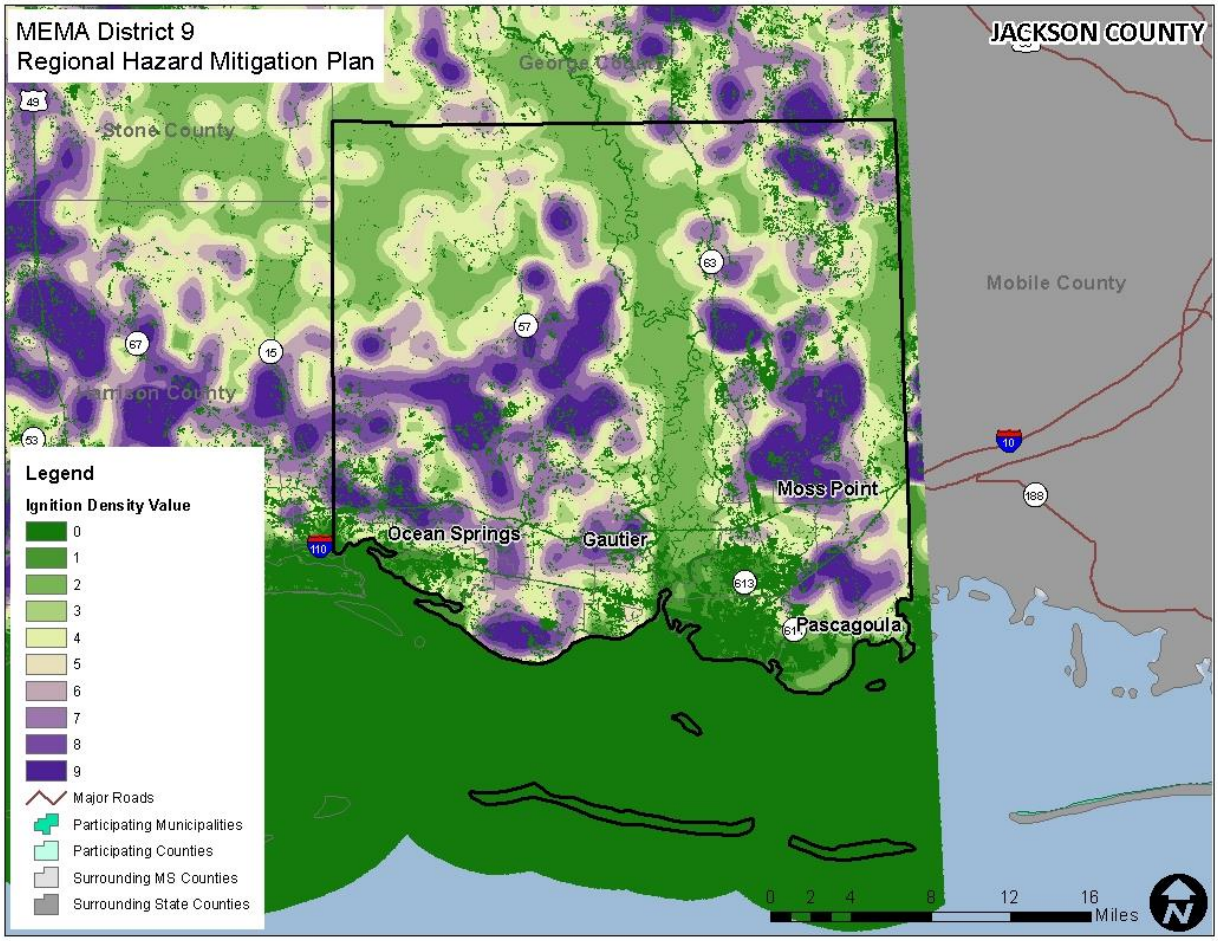
The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

HISTORICAL OCCURRENCES

Figure D.13 shows the Wildfire Ignition Density in Jackson County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.[10]

[10] Southern Wildfire Risk Assessment, 2014.

FIGURE D.13: WILDFIRE IGNITION DENSITY IN JACKSON COUNTY



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Jackson County experiences an average of 78 wildfires annually which burn a combined 1,857 acres, on average per year. The data indicates that most of these fires are small, averaging 24 acres per fire. **Table D.15** provides a summary of wildfire occurrences in Jackson County and **Table D.16** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

TABLE D.15: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007 -2016)*

	Jackson County
Average Number of Fires per year	78.7
Average Number of Acres Burned per year	1,856.7
Average Number of Acres Burned per fire	23.6

*These values reflect averages over a 10-year period.
Source: Mississippi Forestry Commission

TABLE D.16: HISTORICAL WILDFIRE OCCURRENCES IN JACKSON COUNTY

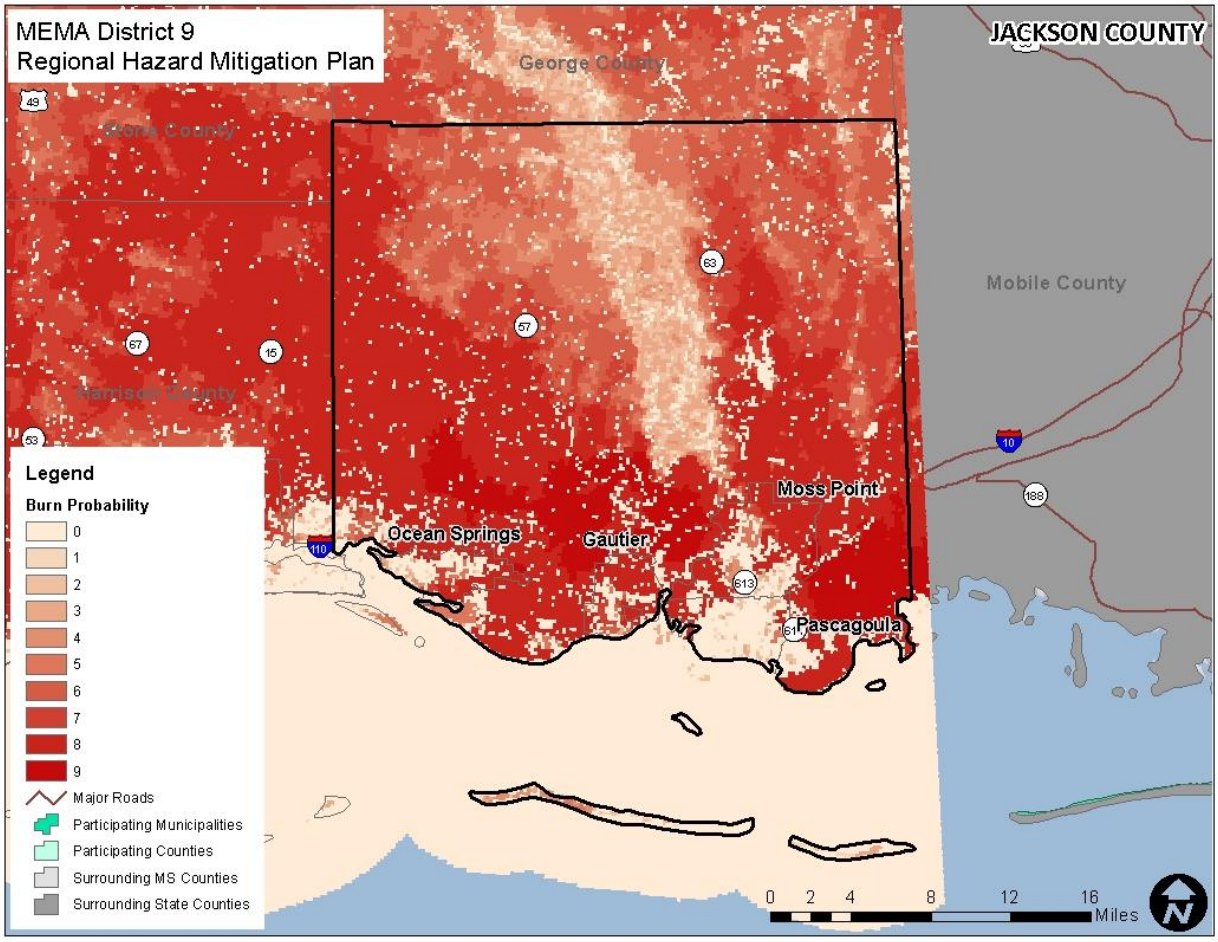
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Jackson County										
Number of Fires	107	73	79	47	161	67	71	44	88	50
Number of Acres Burned	1,863	1,742	1,441	418	3,660	776	1,272	621	1,754	5,020

Source: Mississippi Forestry Commission

PROBABILITY OF FUTURE OCCURRENCES

Wildfire events will be an ongoing occurrence in Jackson County. **Figure D.14** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Jackson County for future wildfire events is highly likely (100 percent annual probability).

FIGURE D.14: BURN PROBABILITY IN JACKSON COUNTY



Source: Southern Wildfire Risk Assessment

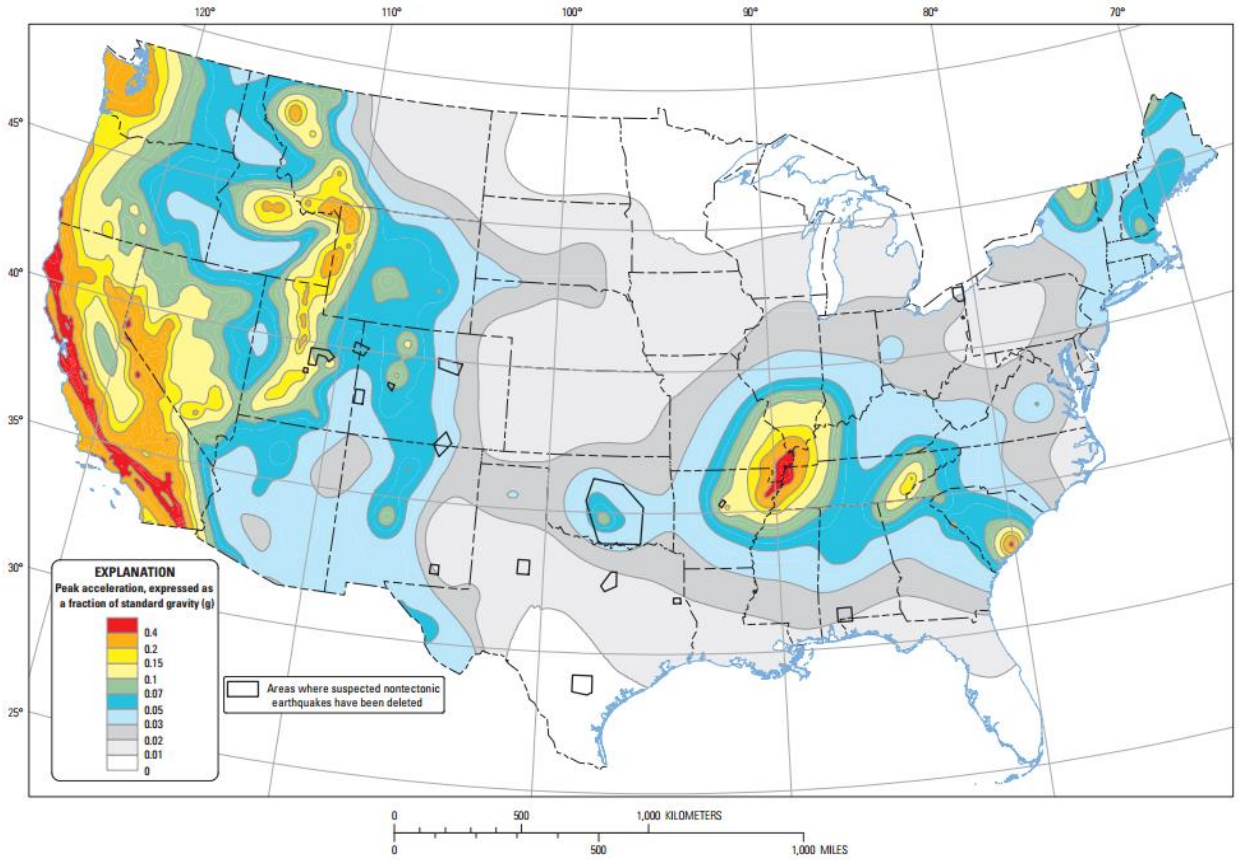
GEOLOGIC HAZARDS

D.2.8 Earthquake

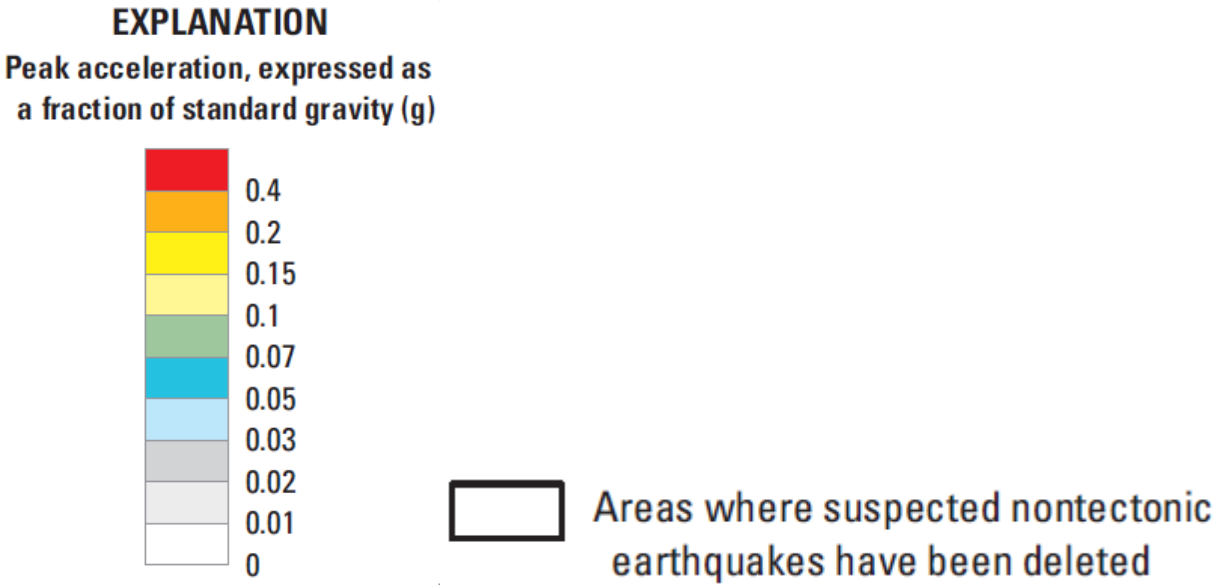
LOCATION AND SPATIAL EXTENT

Figure D.15 shows the intensity level associated with Jackson County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Jackson County lies within an approximate zone of level "1" to "2" ground acceleration. This indicates that the county exists within an area of low seismic risk.

FIGURE D.15: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS



Ten-percent probability of exceedance in 50 years map of peak ground acceleration



Source: United States Geological Survey, 2014

The primary source of potential damage to Jackson County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Jackson County does not have any identified liquefaction potential risk.

HISTORICAL OCCURRENCES

No earthquakes are known to have affected Jackson County since 1638. **Table D.17** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure D.16** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county boundaries during this period). A detailed occurrence of each event including the date, distance from the epicenter, magnitude, and Modified Mercalli Intensity (if known) can be found in **Table D.18**.[11]

TABLE D.17: SUMMARY OF SEISMIC ACTIVITY IN JACKSON COUNTY

Location	Number of Occurrences	Greatest MMI Reported	Richter Scale Equivalent
Gautier	0	--	--
Moss Point	0	--	--
Ocean Springs	0	--	--
Pascagoula	0	--	--
Unincorporated Area	0	--	--
JACKSON COUNTY TOTAL	**0**	**--**	**--**

Source: National Geophysical Data Center

TABLE D.18: SIGNIFICANT SEISMIC EVENTS IN JACKSON COUNTY (1638 -1985)

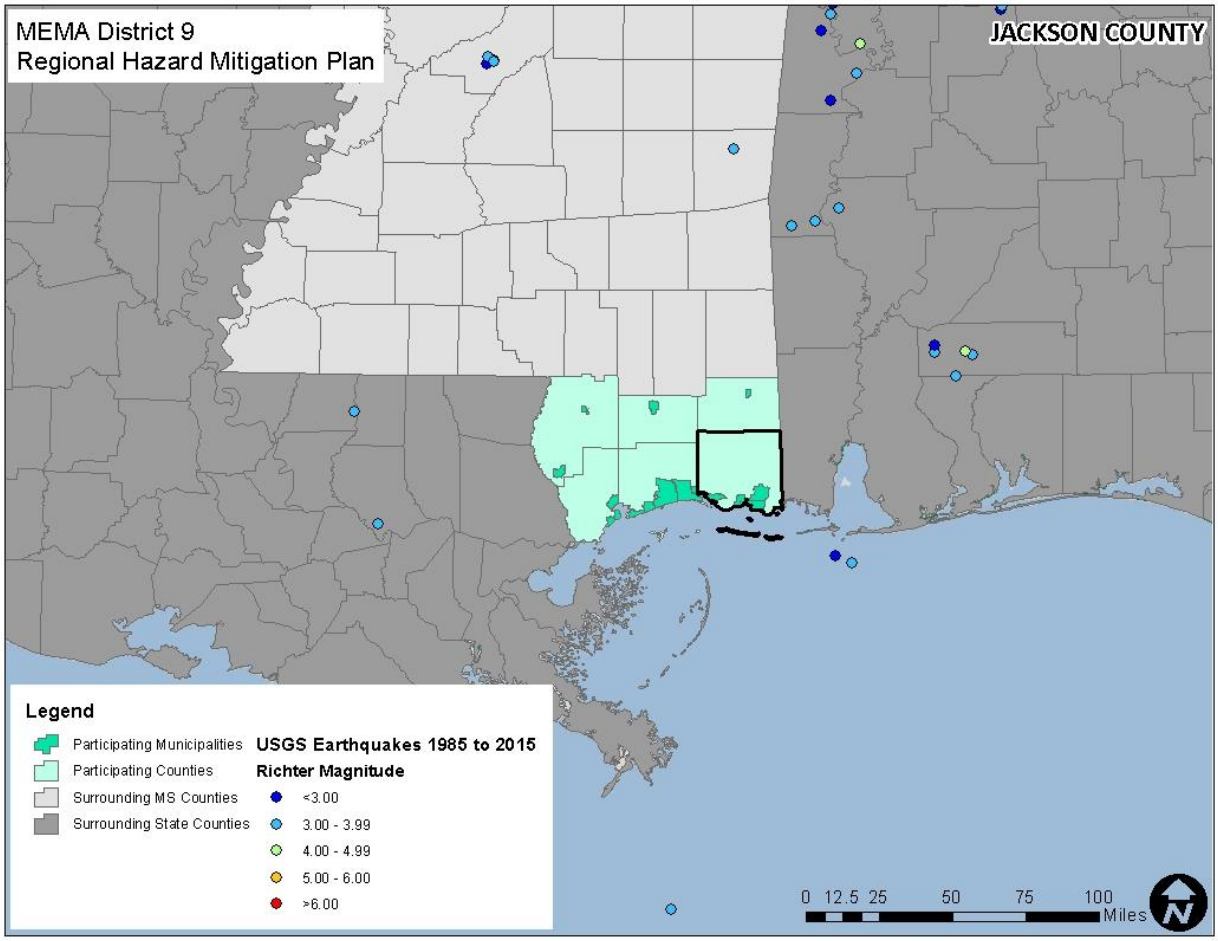
Location	Date	Epicentral Distance	Magnitude	MMI
Gautier				
None reported	--	--	--	--
Moss Point				
None reported	--	--	--	--
Ocean Springs				
None reported	--	--	--	--
Pascagoula				
None reported	--	--	--	--

[11] Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of "unknown" is reported.

Location	Date	Epicentral Distance	Magnitude	MMI
Unincorporated Area				
None reported	--	--	--	--

Source: National Geophysical Data Center

FIGURE D.16: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR JACKSON COUNTY (1985-2015)



Source: United States Geological Survey

PROBABILITY OF FUTURE OCCURRENCES

The probability of significant, damaging earthquake events affecting Jackson County is unlikely. However, it is possible that future earthquakes resulting in light to moderate perceived shaking and damages ranging from none to very light will affect the county. The annual probability level for the county is estimated to be between 1 and 10 percent (possible).

WIND-RELATED HAZARDS

D.2.9 Extreme Cold

Extreme cold typically impacts a large area and cannot be confined to any geographic or political boundaries. The entire county is susceptible to extreme cold conditions.

HISTORICAL OCCURRENCES

Data from the National Climatic Data Center was used to determine historical extreme cold events in Jackson County. Two events were reported:

February 2, 1996 – *Cold/Wind Chill* – An arctic airmass overspread much of south Mississippi bringing the longest extended period of cold weather since 1989. In Amite County, 4SW Gillsburg, a 67 year old man died from hypothermia on the 4th after the fire in a wood burning heater went out. Considerable property damage resulted from broken pipes due to the extended period of subfreezing temperatures. In Jackson County, Moss Point and Gautier had broken pipes in 100 and 147 houses, respectively.

December 18, 1996 – *Cold/Wind Chill* – An arctic airmass overspread south Mississippi resulting in three consecutive nights with subfreezing minimum temperatures. Temperatures lowered into the mid-teens over the southwest section of the state and near 20 degrees along the Gulf Coast.

PROBABILITY OF FUTURE OCCURRENCES

Based on historical occurrence information, it is assumed that all of Jackson County has a probability level of possible (between 1 and 10 percent annual probability) for future extreme cold events to impact the county.

D.2.10 Extreme Heat

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. The entire county is susceptible to extreme heat conditions.

HISTORICAL OCCURRENCES

The National Climatic Data Center was used to determine historical heat wave occurrences in the county.

July 2000 – July was a hot and dry month in Southeast Mississippi. In Beaumont the temperature was 100 degrees or higher eleven days during the month with the hottest being 105 degrees. In Richton the temperature was 100 degrees or higher three days during the month with the hottest being 102 degrees. In Waynesboro the temperature was 100 degrees or higher four days during the month with the hottest being 103 degrees. In Wiggins the temperature was 100 degrees or higher nine days during the month with 105 degrees being the hottest. In addition to being hot is was also a dry month across the area. Most stations ended up with below normal rainfall totals for the month. In Jackson County, a 68 year old man died from heat exhaustion while sitting in his pickup truck in a parking lot with the windows rolled up, and 10 days later, a 58 year old male was found dead from heat exhaustion while sitting in his truck in the driveway of his home with the windows rolled up.

August 2010 – Hot and humid conditions produced heat index values between 110 and 115 degrees over coastal Mississippi. A 48 year old construction worker collapsed and died while working on a highway construction project. Jackson County coroner classified the fatality as heat related with the cause of death as hyperthermia.

PROBABILITY OF FUTURE OCCURRENCES

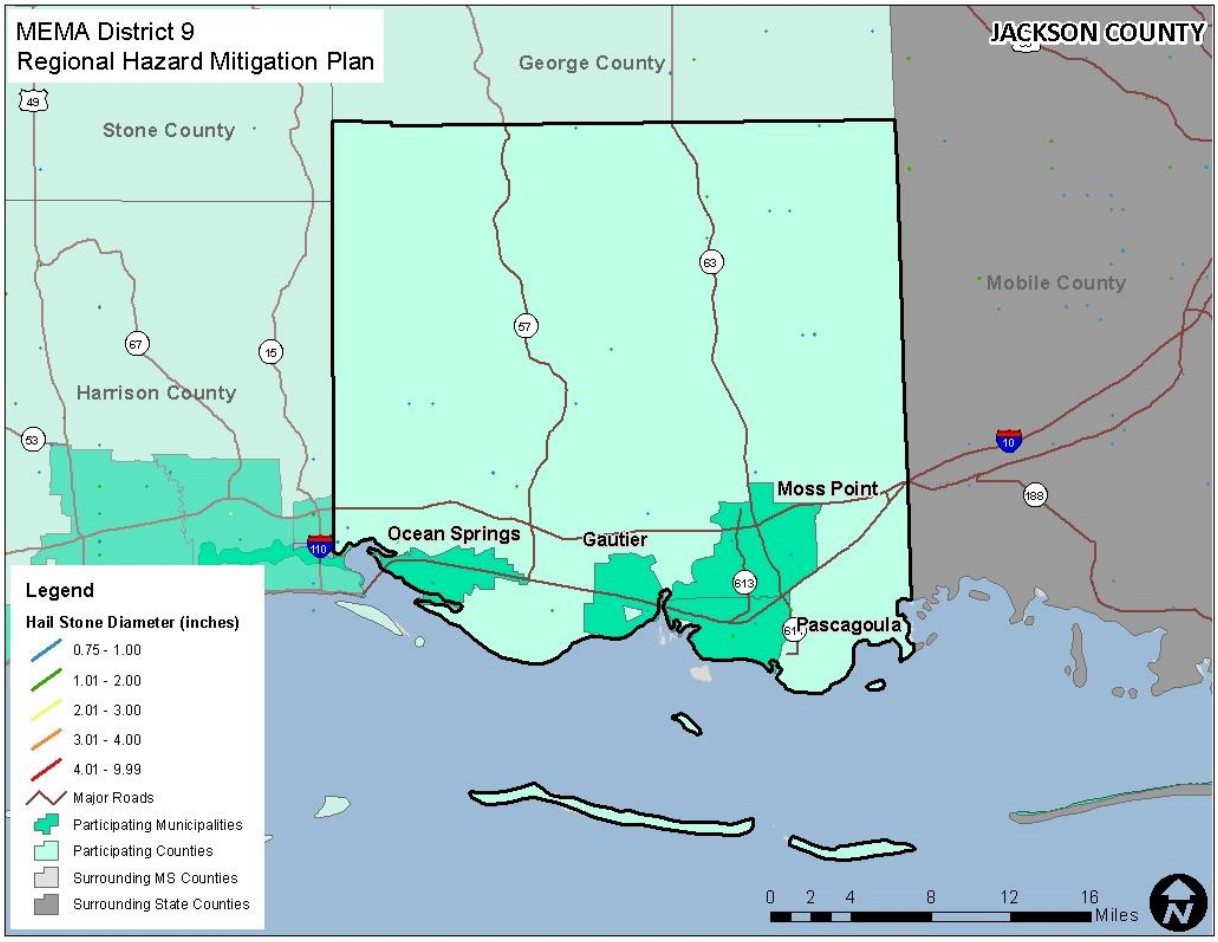
Based on historical occurrence information, it is assumed that all of Jackson County has a probability level of highly likely (100 percent annual probability) for future heat wave events.

D.2.11 Hailstorm

LOCATION AND SPATIAL EXTENT

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Jackson County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure D.17** shows the location of hail events that have impacted the county between 1955 and 2015.

FIGURE D.17: HAILSTORM TRACKS IN JACKSON COUNTY



Source: National Weather Service Storm Prediction Center

HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 64 recorded hailstorm events have affected Jackson County since 1965.[12] In all, hail occurrences resulted in almost $300 (2016 dollars) in property damages.[13] Hail ranged in diameter from 0.75 inches to 3.0 inches. **Table D.19** provides a summary of the hail events in Jackson County. Detailed information about each event that occurred in the county is provided in **Table D.20**.

It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

[12] These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through June 2016. It is likely that additional hail events have affected Jackson County. As additional local data becomes available, this hazard profile will be amended.

[13] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

TABLE D.19: SUMMARY OF HAIL OCCURRENCES IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	4	0/0	$289	$17
Moss Point	3	0/0	$0	$0
Ocean Springs	9	0/0	$0	$0
Pascagoula	6	0/0	$0	$0
Unincorporated Area	42	0/0	$0	$0
JACKSON COUNTY TOTAL	**64**	**0/0**	**$289**	**$17**

Source: National Climatic Data Center

TABLE D.20: HISTORICAL HAIL OCCURRENCES IN JACKSON COUNTY

Location	Date	Magnitude	Deaths/Injuries	Property Damage*
Gautier				
GAUTIER	4/29/1999	1.00 in.	0/0	$0
GAUTIER	4/29/1999	1.75 in.	0/0	$289
GAUTIER	5/1/2013	1.00 in.	0/0	$0
GAUTIER	4/25/2015	1.00 in.	0/0	$0
Moss Point				
Moss Point	6/2/1995	0.75 in.	0/0	$0
MOSS PT	4/29/1999	1.75 in.	0/0	$0
MOSS PT	7/17/2003	0.88 in.	0/0	$0
Ocean Springs				
OCEAN SPGS	4/14/1996	1.75 in.	0/0	$0
OCEAN SPGS	1/8/1997	0.75 in.	0/0	$0
OCEAN SPGS	5/28/1999	0.88 in.	0/0	$0
OCEAN SPGS	3/11/2001	1.75 in.	0/0	$0
OCEAN SPGS	4/29/2004	0.88 in.	0/0	$0
OCEAN SPGS	5/29/2005	1.25 in.	0/0	$0
OCEAN SPGS	6/23/2006	1.00 in.	0/0	$0
OCEAN SPGS	7/13/2007	1.00 in.	0/0	$0
OCEAN SPGS	4/28/2016	1.00 in.	0/0	$0
Pascagoula				
Pascagoula	5/3/1994	0.88 in.	0/0	$0
PASCAGOULA	5/6/1998	0.75 in.	0/0	$0
PASCAGOULA	4/29/1999	0.75 in.	0/0	$0
PASCAGOULA	7/25/2004	0.88 in.	0/0	$0
PASCAGOULA	6/23/2006	0.88 in.	0/0	$0
PASCAGOULA	4/25/2015	1.75 in.	0/0	$0
Unincorporated Area				
JACKSON CO.	4/19/1965	3.00 in.	0/0	$0
JACKSON CO.	4/23/1969	1.75 in.	0/0	$0
JACKSON CO.	5/24/1972	1.75 in.	0/0	$0
JACKSON CO.	3/31/1976	1.75 in.	0/0	$0
JACKSON CO.	5/19/1980	1.00 in.	0/0	$0

Location	Date	Magnitude	Deaths/Injuries	Property Damage*
JACKSON CO.	7/7/1980	1.75 in.	0/0	$0
JACKSON CO.	3/22/1981	0.75 in.	0/0	$0
JACKSON CO.	6/11/1982	0.75 in.	0/0	$0
JACKSON CO.	3/24/1984	1.75 in.	0/0	$0
JACKSON CO.	3/24/1984	1.75 in.	0/0	$0
JACKSON CO.	7/15/1985	1.75 in.	0/0	$0
JACKSON CO.	4/18/1988	1.75 in.	0/0	$0
JACKSON CO.	4/18/1988	1.75 in.	0/0	$0
JACKSON CO.	5/23/1989	0.75 in.	0/0	$0
JACKSON CO.	6/30/1989	0.75 in.	0/0	$0
JACKSON CO.	4/22/1990	1.75 in.	0/0	$0
JACKSON CO.	1/30/1991	0.75 in.	0/0	$0
JACKSON CO.	5/26/1992	0.75 in.	0/0	$0
Oxford	5/18/1993	1.75 in.	0/0	$0
Hurley	7/2/1995	1.00 in.	0/0	$0
Van Cleave	7/9/1995	0.75 in.	0/0	$0
HURLEY	3/18/1996	0.75 in.	0/0	$0
HURLEY	3/30/1996	1.75 in.	0/0	$0
WADE	9/1/1997	0.75 in.	0/0	$0
VANCLEAVE	5/6/1998	0.75 in.	0/0	$0
HURLEY	3/29/2000	2.00 in.	0/0	$0
VANCLEAVE	7/21/2000	0.75 in.	0/0	$0
HURLEY	3/31/2002	1.00 in.	0/0	$0
ESCATAWPA	8/2/2002	1.00 in.	0/0	$0
HURLEY	5/3/2003	1.75 in.	0/0	$0
ESCATAWPA	3/31/2005	1.00 in.	0/0	$0
VANCLEAVE	4/1/2005	0.75 in.	0/0	$0
WADE	12/28/2007	0.75 in.	0/0	$0
HURLEY	5/25/2008	1.00 in.	0/0	$0
VANCLEAVE	4/2/2009	0.75 in.	0/0	$0
WADE	5/15/2009	0.88 in.	0/0	$0
WADE	7/26/2009	1.00 in.	0/0	$0
WADE	5/26/2011	1.75 in.	0/0	$0
HURLEY	6/5/2011	1.00 in.	0/0	$0
BIG PT	7/12/2013	1.00 in.	0/0	$0
WADE	2/23/2016	1.75 in.	0/0	$0
NORTH BILOXI ARPT	4/28/2016	1.25 in.	0/0	$0

*Property damage is reported in 2016 dollars; All damage may not have been reported.
Source: National Climatic Data Center

PROBABILITY OF FUTURE OCCURRENCES

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Jackson County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

D.2.12 Hurricane and Tropical Storm

LOCATION AND SPATIAL EXTENT

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States, and while coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland. Jackson County is located in a region of the country that is susceptible to all of the hazards wrought by hurricanes and tropical storms. All areas throughout Jackson County are susceptible to the accompanying hazard effects of extreme wind, flooding, and tornadoes, and coastal areas are also extremely susceptible to the added effects of storm surge, wave action, coastal erosion, and tidal flooding.[14]

HISTORICAL OCCURRENCES

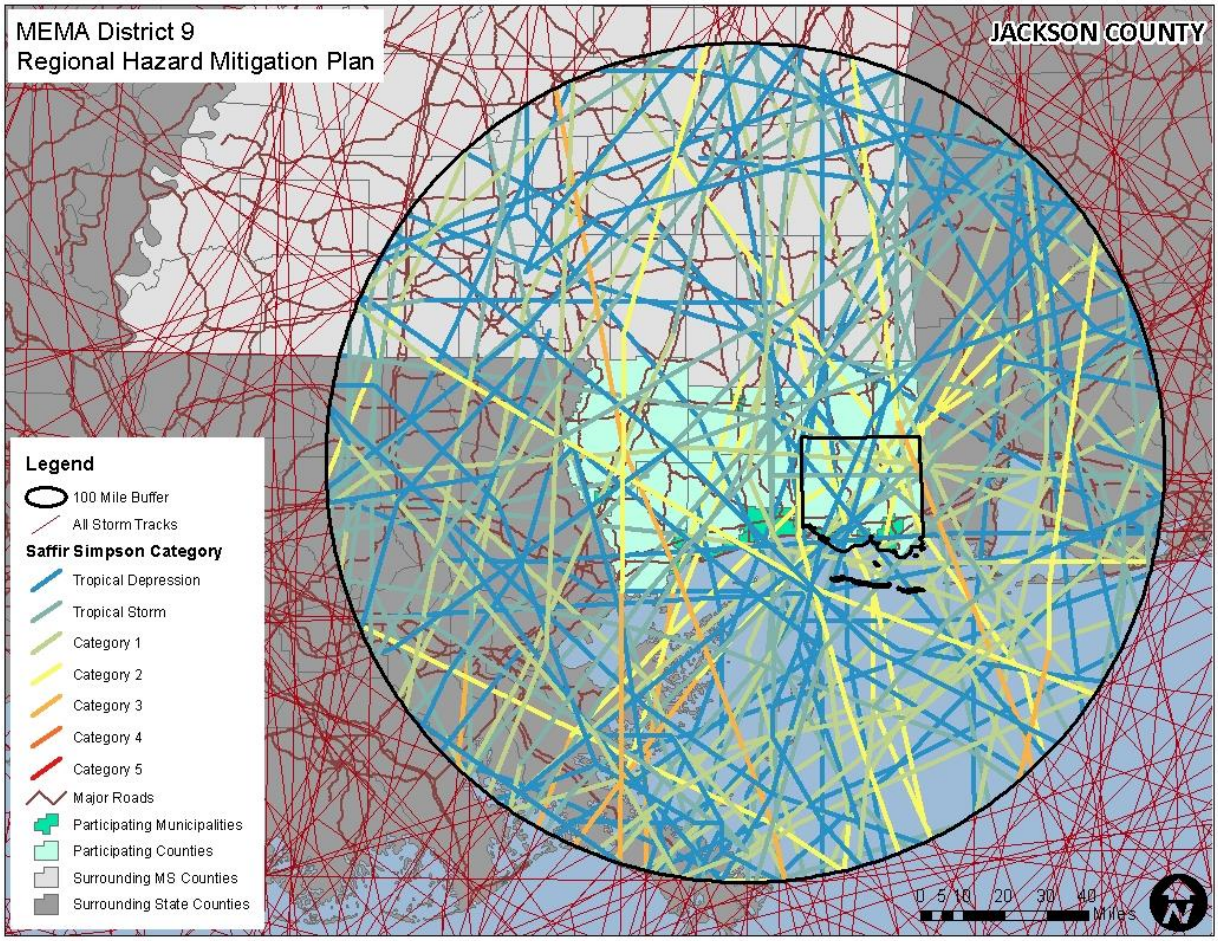
According to the National Hurricane Center's historical storm track records, 119 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 9 Region since 1855.[15] This includes: 4 Category 3 hurricanes, 15 Category 2 hurricanes, 28 Category 1 hurricanes, 29 tropical storms, and 43 tropical depressions. Additionally, four other major storms had large-scale impacts on the region and are not included in these totals. These storms are listed below and range in Category from 1 to 4.

Of the recorded storm events, 58 hurricane or tropical storm/depression events traversed directly through the region as shown in **Figure D.18**. Notable storms include Hurricane Camille (1969), Hurricane Frederic (1979), and Hurricane Katrina (2005). **Table D.21** provides for each event the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 9 Region) and category of the storm based on the Saffir-Simpson Scale.

[14] Distinct hazard area locations for flooding, storm surge, wave action, and coastal erosion are discussed elsewhere in this subsection.

[15] These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

FIGURE D.18: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 9 REGION



Source: National Oceanic and Atmospheric Administration, National Hurricane Center

TABLE D.21: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 9 DISTRICT REGION (1842–2016)

Date of Occurrence	Storm Name	Maximum Wind Speed (knots)	Storm Category
8/25/1852	UNNAMED	93	Category 2
8/3/1855	NOT NAMED	--	Tropical Depression
9/16/1855	UNNAMED	96	Category 2
6/24/1857	NOT NAMED	--	Tropical Depression
9/15/1859	UNNAMED	79	Category 1
8/11/1860	UNNAMED	96	Category 2
9/15/1860	UNNAMED	89	Category 2
8/17/1861	NOT NAMED	--	Tropical Depression
11/1/1861	NOT NAMED	--	Tropical Depression
9/15/1862	NOT NAMED	--	Tropical Depression
9/16/1862	NOT NAMED	--	Tropical Depression
10/1/1863	UNNAMED	43	Tropical Storm

Date of Occurrence	Storm Name	Maximum Wind Speed (knots)	Storm Category
6/3/1866	NOT NAMED	--	Tropical Depression
9/16/1867	NOT NAMED	--	Tropical Depression
10/5/1867	UNNAMED	89	Category 2
10/3/1868	NOT NAMED	--	Tropical Depression
9/5/1869	UNNAMED	79	Category 1
7/30/1870	NOT NAMED	--	Tropical Depression
7/11/1872	UNNAMED	59	Tropical Storm
9/18/1875	UNNAMED	18	Tropical Depression
9/18/1877	UNNAMED	79	Category 1
9/1/1879	UNNAMED	89	Category 2
10/7/1879	UNNAMED	59	Tropical Storm
8/31/1880	UNNAMED	70	Category 1
8/2/1881	NOT NAMED	--	Tropical Depression
8/3/1881	UNNAMED	59	Tropical Storm
8/30/1885	UNNAMED	59	Tropical Storm
9/26/1885	UNNAMED	70	Category 1
6/15/1886	UNNAMED	50	Tropical Storm
6/14/1887	UNNAMED	33	Tropical Depression
10/19/1887	UNNAMED	82	Category 1
6/27/1888	NOT NAMED	--	Tropical Depression
9/23/1889	UNNAMED	79	Category 1
8/27/1890	UNNAMED	43	Tropical Storm
9/21/1891	NOT NAMED	--	Tropical Depression
9/12/1892	UNNAMED	59	Tropical Storm
9/7/1893	UNNAMED	79	Category 1
10/2/1893	UNNAMED	97	Category 3
8/7/1894	UNNAMED	59	Tropical Storm
8/15/1895	UNNAMED	59	Tropical Storm
9/13/1900	UNNAMED	43	Tropical Storm
8/14/1901	UNNAMED	82	Category 1
10/9/1905	UNNAMED	43	Tropical Storm
9/27/1906	UNNAMED	93	Category 2
9/21/1907	UNNAMED	43	Tropical Storm
8/11/1911	UNNAMED	79	Category 1
6/13/1912	UNNAMED	59	Tropical Storm
7/17/1912	UNNAMED	5	Tropical Depression
9/13/1912	UNNAMED	82	Category 1
9/18/1914	UNNAMED	33	Tropical Depression
9/29/1915	UNNAMED	96	Category 2
7/5/1916	UNNAMED	95	Category 2
10/17/1922	UNNAMED	18	Tropical Depression
6/26/1923	UNNAMED	43	Tropical Storm
10/17/1923	UNNAMED	59	Tropical Storm
9/20/1926	UNNAMED	93	Category 2
9/1/1932	UNNAMED	82	Category 1
10/15/1932	UNNAMED	59	Tropical Storm

Date of Occurrence	Storm Name	Maximum Wind Speed (knots)	Storm Category
7/27/1936	UNNAMED	43	Tropical Storm
8/22/1936	UNNAMED	5	Tropical Depression
6/16/1939	UNNAMED	59	Tropical Storm
9/26/1939	UNNAMED	50	Tropical Storm
9/24/1940	UNNAMED	18	Tropical Depression
9/10/1944	UNNAMED	64	Category 1
9/5/1945	UNNAMED	18	Tropical Depression
9/19/1947	UNNAMED	92	Category 2
9/4/1948	UNNAMED	79	Category 1
9/4/1949	UNNAMED	43	Tropical Storm
8/31/1950	BAKER	82	Category 1
8/1/1955	BRENDA	70	Category 1
8/27/1955	UNNAMED	50	Tropical Storm
9/24/1956	FLOSSY	82	Category 1
9/18/1957	ESTHER	64	Category 1
10/8/1959	IRENE	43	Tropical Storm
9/15/1960	ETHEL	85	Category 2
9/26/1960	FLORENCE	1	Tropical Depression
10/4/1964	HILDA	70	Category 1
9/10/1965	BETSY*	117	Category 4
9/29/1965	DEBBIE	33	Tropical Depression
8/18/1969	CAMILLE	100	Category 3
8/8/1971	UNNAMED	5	Tropical Depression
9/4/1971	FERN	5	Tropical Depression
9/16/1971	EDITH	70	Category 1
7/29/1975	UNNAMED	18	Tropical Depression
10/17/1975	UNNAMED	5	Tropical Depression
9/24/1976	UNNAMED	5	Tropical Depression
7/19/1977	UNNAMED	18	Tropical Depression
9/6/1977	BABE	18	Tropical Depression
10/25/1977	UNNAMED	18	Tropical Depression
8/10/1978	UNNAMED	5	Tropical Depression
7/11/1979	BOB	74	Category 1
9/12/1979	FREDERIC	97	Category 3
7/20/1980	UNNAMED	5	Tropical Depression
10/27/1984	UNNAMED	18	Tropical Depression
9/2/1985	ELENA	95	Category 2
10/31/1985	JUAN	64	Category 1
8/12/1987	UNNAMED	5	Tropical Depression
8/8/1988	BERYL	5	Tropical Depression
8/9/1988	BERYL	50	Tropical Storm
9/10/1988	FLORENCE	79	Category 1
8/3/1995	ERIN	82	Category 1
7/19/1997	DANNY	79	Category 1
9/27/1998	GEORGES	92	Category 2
9/20/1998	HERMINE	33	Tropical Depression

Date of Occurrence	Storm Name	Maximum Wind Speed (knots)	Storm Category
6/11/2001	ALLISON	43	Tropical Storm
8/5/2002	BERTHA	33	Tropical Depression
9/14/2002	HANNA	59	Tropical Storm
9/26/2002	ISIDORE	64	Category 1
6/30/2003	BILL	59	Tropical Storm
7/1/2003	BILL	18	Tropical Depression
9/16/2004	IVAN	96	Category 2
6/11/2005	ARLENE	59	Tropical Storm
7/6/2005	CINDY	74	Category 1
7/10/2005	DENNIS*	100	Category 3
8/29/2005	KATRINA	98	Category 3
9/22/2007	TEN	5	Tropical Depression
8/24/2008	FAY	18	Tropical Depression
9/1/2008	GUSTAV*	87	Category 2
11/10/2009	IDA	70	Category 1
7/25/2010	BONNIE	5	Tropical Depression
8/12/2010	FIVE	5	Tropical Depression
9/5/2011	LEE	43	Tropical Storm
8/28/2012	ISAAC*	70	Category 1

*It should be noted that the track of several major hurricanes that impacted the region fell outside of the 100-mile buffer. These storms were included in the table due to their significant impact (Betsy, 1965; Dennis, 2005; Gustav, 2008; and Isaac, 2012), but it should be noted that wind speed and storm category are estimated based on anecdotal information.
Source: National Hurricane Center

Federal records indicate that 12 disaster declarations were made in 1965 (Hurricane Betsy), 1969 (Hurricane Camille), 1979 (Hurricane Frederic), 1985 (Hurricane Elena), 1998 (Hurricane Georges), 2001 (Tropical Storm Allison), 2002 (Tropical Storm Isidore), 2004 (Hurricane Ivan), 2005 (Hurricane Dennis and Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac).[16] Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

Hurricane Georges – September 25-29, 1998
Hurricane Georges, a strong Category 2 hurricane moved slowly northwest across the Gulf of Mexico toward southeast Louisiana and coastal Mississippi on the September 25 and September 26. As the hurricane approached the mouth of the Mississippi River on September 27, it slowly turned toward the north making landfall along the Mississippi Coast just to the east of Biloxi, MS at 0400 CST on September 28. The hurricane moved only slowly north during the morning hours, at times becoming nearly stationary. The hurricane finally was downgraded to a tropical storm at 1500CST on September 28 when it was located north of Biloxi. The tropical storm then moved very slowly eastward into southern Alabama on September 29.

The greatest affect from the hurricane occurred over Jackson County which experienced the intense eastern portion of the hurricanes eyewall and highest storm surge.

[16] A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

Due to the slow forward speed of the hurricane very heavy rainfall occurred over eastern Harrison County and Jackson County leading to record flooding on streams and rivers. The barrier islands in the Mississippi Sound were also heavily damaged by wind and storm surge. A new three quarter mile cut developed in the east portion of Ship Island. Total insured property damage in Mississippi was estimated at near 310 million dollars by insurance industry sources. When uninsured losses and public property damage considered, total damages in Mississippi will likely approach $620 million.

Jackson County - Jackson County bore the brunt of Hurricane Georges with the area experiencing the strong right front quadrant of the hurricane's circulation. A storm surge of 8 to 11 feet caused storm surge flooding along low lying coastal areas. This was the greatest storm surge flooding in Jackson County in nearly 30 years. In the east beach section of the Bellefontaine area, 23 of 27 homes were heavily damaged or destroyed by storm surge. Many businesses and industries located in low lying coastal areas were flooded causing considerable property damage and loss of revenue. The U.S. Navy facility at Pascagoula suffered $2.2 million in property damage, primarily roof and water damage.

Several unofficial anemometers recorded gusts between 85 and 100 mph in the Pascagoula area. Moderate wind damage was reported across the parish. Numerous commercial signs were destroyed, trees downed, roofs damaged, and power lines and poles downed.

Approximately 4600 people sought refuge in public hurricane evacuation shelters in Jackson County. Two shelters, one in Gautier and one in Pascagoula, suffered wind damage to the roof at the height of the storm.

Due to the slow forward speed of Hurricane Georges, widespread heavy rainfall occurred over Jackson County and over the watershed of the Pascagoula and Escatawpa Rivers. Rainfall of 10 to 15 inches was common over Jackson County. River flooding developed over much of the county by September 28. A record flood crest of 20.82 feet was established on Red Creek at Vestry. On the Escatawpa River, a record flood crest of 22.70 feet was established at Agricola. Approximately 3,000 people were evacuated from flooded areas, primarily in the Escatawpa River basin, with hundreds of structures flooded in the county.

Hurricane Katrina – August 24-30, 2005
Hurricane Katrina was one of the strongest and most destructive hurricanes on record to impact the coast of the United States. It will likely be recorded as one the worst natural disaster in the history of the United States to date resulting in catastrophic damage and numerous casualties in southeast Louisiana and along the Mississippi coast. Damage and casualties resulting from Hurricane Katrina extended as far east as Alabama and the panhandle of Florida. Katrina developed from a tropical depression southeast of the Bahamas on August 24th. After moving through the Bahamas as a tropical storm, Katrina strengthened to a category 1 hurricane prior to landfall in south Florida around the Miami area on the 25th of August. Katrina crossed south Florida and entered the Gulf of Mexico and began to strengthen. Hurricane Katrina strengthened to a category 5 storm on August 28th about 250 miles south southeast of the mouth of the Mississippi River with winds reaching their peak intensity of 175 mph and a central pressure of 902 mb. Post event analysis by the National Hurricane Center indicates that Katrina weakened slightly before making landfall as a strong category 3 storm in initial landfall in lower Plaquemines Parish. Maximum sustained winds were estimated at 110 knots or 127 mph and a central pressure of 920 mb around 610 AM CDT on August 29th in southeast Louisiana just south of Buras in Plaquemines Parish. The storm continued on a north northeast track with the center passing about 40 miles southeast of New Orleans with a second landfall occurring near the Louisiana and Mississippi border around 945 AM CDT as a

category 3 storm with maximum sustained winds estimated around 105 knots or 121 mph. Katrina continued to weaken as it moved north northeast across Mississippi during the day, but remained at hurricane strength 100 miles inland near Laurel, Mississippi. Katrina weakened to a tropical depression near Clarksville, Tennessee on August 30th.

Damage across coastal Mississippi was catastrophic. The storm surge associated with Hurricane Katrina approached or exceeded the surge associated with Hurricane Camille and impacted a much more extensive area. Almost total destruction was observed along the immediate coast in Hancock and Harrison Counties with storm surge damage extending north along bays and bayous to Interstate 10. Thousands of homes and businesses were destroyed by the storm surge. Hurricane force winds also caused damage to roofs, power lines, signage, downed trees, and some windows were broken by wind and wind driven debris in areas away from storm surge flooding, wind damage was widespread with fallen trees taking a heavy toll on houses and power lines. Damage was less extensive in southwest Mississippi. Excluding losses covered by the Federal Flood Insurance Program, insured property losses in Mississippi were estimated at 9.8 billion dollars. Uninsured and insured losses combined were estimated to exceed 100 billion dollars across the Gulf Coast.

As of late October, the following fatality figures were reported in the Mississippi coastal counties; Hancock- 52, Harrison - 83, Jackson - 17. Additional details on fatalities will be given in later updates to storm data.

Due to the failure of power and equipment prior to the peak of the storm, data for wind, storm surge, pressure, and rainfall are incomplete. The lowest pressure on the Mississippi coast was estimated to be 928 mb where the hurricane made landfall near the Louisiana Mississippi border. A pressure of 976 mb was recorded at 0951 CDT by a university weather station deployed in Pascagoula, well east of the landfall location. At approximately the same time, the pressure at the NWS office in Slidell, just to the west of landfall location, recorded a pressure of 934.1 mb at 0938 AM CDT.

The highest wind gusts recorded in Mississippi and the adjacent coastal waters were 117 knots (134 mph) at the Pearl River County EOC office in Poplarville and 102 knots (118 mph) at 1000AM CDT by a university wind tower deployed at the Stennis Space Center in Hancock County. Maximum sustained winds in Mississippi were estimated around 105 knots (121 mph) near the storm's second landfall along the Mississippi and Louisiana border. Unofficial wind observations before the gage failed included a wind gust of 106 kt, (122 mph) at 0615 CDT by an amateur radio operator in Long Beach and a wind gust of 108 kt (124 mph) at the EOC in Pascagoula.

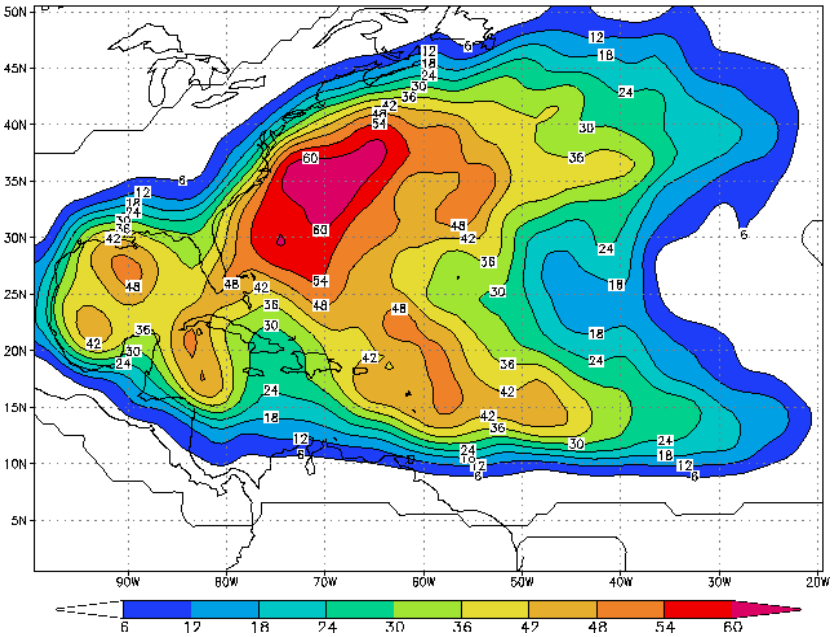
Most tide gages were destroyed by the storm surge so storm surge was determined primarily by post storm high water mark surveys conducted by FEMA. An estimated storm surge of approximately 23.0 feet occurred at the Hancock County EOC operations area in Waveland, and the high water mark measured on the Jackson County EOC building in Pascagoula was 16.1 feet. Preliminary estimates of storm surge along the Mississippi Coast include Hancock County 19-25 feet, Harrison County 19-25 feet, Jackson County 17-21 ft. All storm surge heights are still water elevations referenced to NAVD88 datum.

Storm total rainfall amounts generally ranged from 10 to 16 inches across coastal and south Mississippi with much lower amounts observed over southwest Mississippi. The highest observed storm total rainfall was 11 inches at Stennis Space Center and near Picayune.

PROBABILITY OF FUTURE OCCURRENCES

According to NOAA statistical data, the region is located in an area with an annual probability of a named storm between 30 and 42 percent as presented in **Figure D.19**. This illustration was created by the National Oceanic and Atmospheric Administration's Hurricane Research Division using data from 1944 to 1999 and counting hits when a storm or hurricane was within approximately 100 miles (165 km) of each location. As a reference point, the tip of Florida's outline can be found near the 25N, 80W intersection, and the MEMA District 9 Region is near the 30N, 90W intersection. This empirical probability is fairly consistent with other scientific studies and observed historical data made available through a variety of federal, state, and local sources.

FIGURE D.19: EMPIRICAL PROBABILITY OF A NAMED HURRICANE OR TROPICAL STORM



Source: National Oceanic and Atmospheric Administration

The probability of storm occurrences will vary significantly based on the return interval for different categories of magnitude. The probability of less intense storms (lower return periods) is higher than more intense storms (higher return periods). **Table D.22** profiles the potential peak gust wind speeds that can be expected in the MEMA District 9 Region during a hurricane event for various return periods according to FEMA's HAZUS-MH®.

TABLE D.22: POTENTIAL PEAK GUST WIND SPEEDS PER RETURN PERIOD

50-Year	100-Year	500-Year	1,000-Year
119.4 mph	133.9 mph	160.3 mph	170.0

Source: Federal Emergency Management Agency (Hazus-MH 3.2)

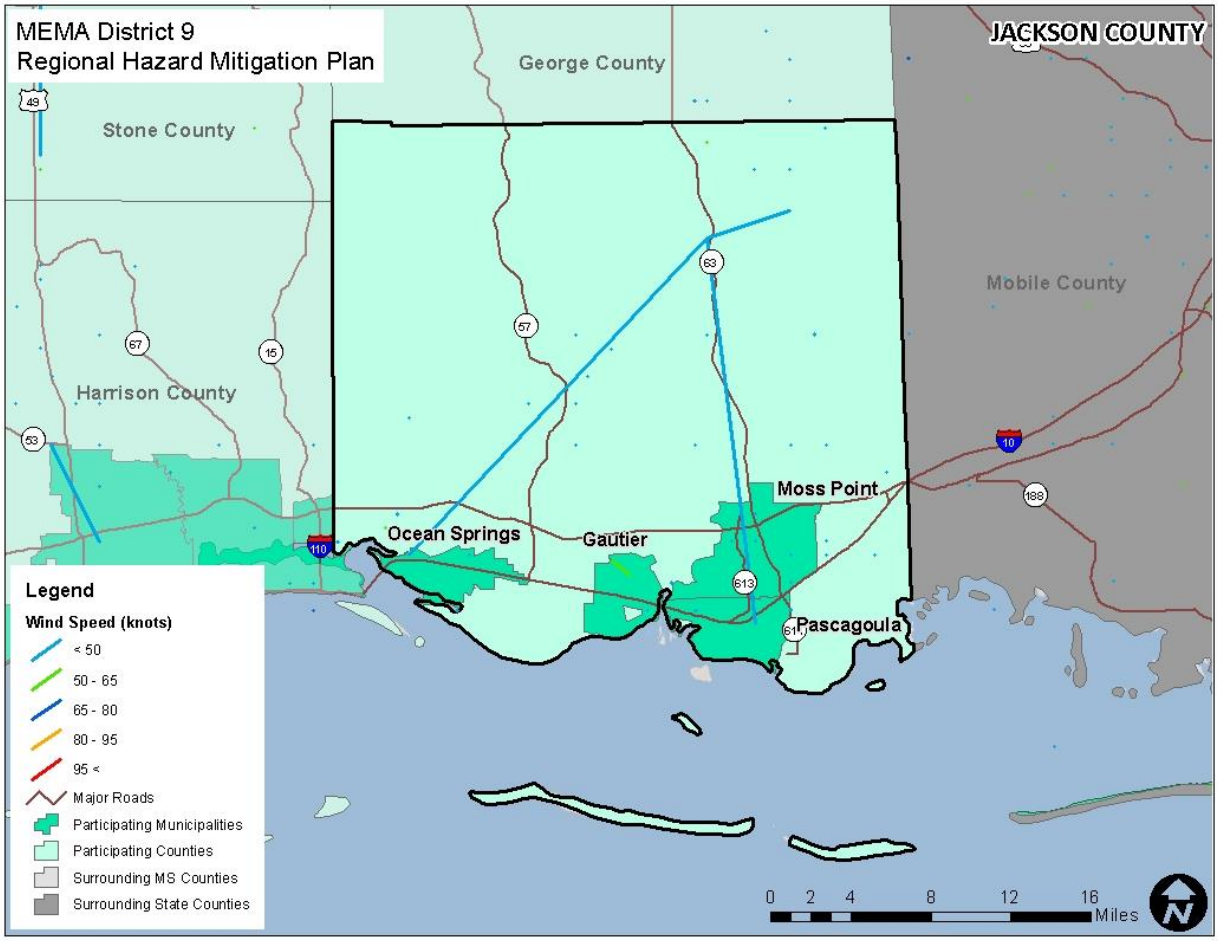
Overall, the probability level of future hurricane and tropical storm occurrence for Jackson County is highly likely (100 percent annual probability).

D.2.13 Severe Thunderstorm/High Wind

LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Jackson County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure D.20** shows the location of wind events that have impacted the county between 1955 and 2015.

FIGURE D.20: SEVERE THUNDERSTORM TRACKS IN JACKSON COUNTY



Source: National Weather Service Storm Prediction Center

HISTORICAL OCCURRENCES

Severe storms were at least partially responsible for four disaster declarations in Jackson County in 1980, 1990, 1995, and 2009.[17] According to NCDC, there have been 127 reported thunderstorm and high wind

[17] A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

events since 1959 in Jackson County.[18] These events caused over $459,000 (2016 dollars) in damages.[19] There were also reports of three injuries. **Table D.23** summarizes this information. Detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event are presented in **Table D.24**.

TABLE D.23: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	3	0/2	$109,389	$9,116
Moss Point	3	0/0	$7,226	$602
Ocean Springs	12	0/0	$29,120	$1,456
Pascagoula	15	0/0	$118,805	$5,657
Unincorporated Area	94	0/1	$194,828	$3,418
JACKSON COUNTY TOTAL	**127**	**0/3**	**$459,368**	**$20,249**

Source: National Climatic Data Center

TABLE D.24: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN JACKSON COUNTY

Location	Date	Type	Magnitude	Deaths/Injuries	Property Damage*
Gautier					
GAUTIER	6/2/2004	Thunderstorm Wind	50 kts. EG	0/0	$7,650
GAUTIER	4/14/2014	Thunderstorm Wind	65 kts. EG	0/2	$101,739
GAUTIER	4/25/2015	Thunderstorm Wind	52 kts. EG	0/0	$0
Moss Point					
MOSS PT	6/2/2004	Thunderstorm Wind	50 kts. EG	0/0	$1,275
MOSS PT	8/30/2006	Thunderstorm Wind	50 kts. EG	0/0	$597
MOSS PT	8/24/2011	Thunderstorm Wind	52 kts. EG	0/0	$5,354
Ocean Springs					
OCEAN SPGS	9/21/1996	Thunderstorm Wind	--	0/0	$1,535
OCEAN SPGS	1/4/2000	Thunderstorm Wind	--	0/0	$1,399
OCEAN SPGS	5/28/2000	Thunderstorm Wind	--	0/0	$699
OCEAN SPGS	7/21/2000	Thunderstorm Wind	--	0/0	$699
OCEAN SPGS	11/5/2002	Thunderstorm Wind	--	0/0	$2,008
OCEAN SPGS	4/29/2004	Thunderstorm Wind	50 kts. EG	0/0	$1,275
OCEAN SPGS	6/2/2004	Thunderstorm Wind	50 kts. EG	0/0	$1,275
OCEAN SPGS	7/13/2004	Thunderstorm Wind	50 kts. EG	0/0	$1,913
OCEAN SPGS	7/13/2004	Thunderstorm Wind	50 kts. EG	0/0	$3,825
OCEAN SPGS	6/19/2007	Thunderstorm Wind	55 kts. MG	0/0	$13,939
OCEAN SPGS	5/28/2010	Thunderstorm Wind	52 kts. EG	0/0	$552
OCEAN SPGS	6/17/2016	Thunderstorm Wind	55 kts. EG	0/0	$0

[18] These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through June 2016 and these high wind events are only inclusive of those reported by NCDC from 1996 through June 2016. It is likely that additional thunderstorm and high wind events have occurred in Jackson County. As additional local data becomes available, this hazard profile will be amended.

[19] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

Location	Date	Type	Magnitude	Deaths/Injuries	Property Damage*
Pascagoula					
Pascagoula	5/9/1995	Thunderstorm Wind	60 kts.	0/0	$0
PASCAGOULA	1/26/1996	Thunderstorm Wind	--	0/0	$768
PASCAGOULA	1/24/1997	Thunderstorm Wind	--	0/0	$1,501
PASCAGOULA	4/5/1997	Thunderstorm Wind	--	0/0	$3,001
PASCAGOULA	6/5/1998	Thunderstorm Wind	--	0/0	$739
PASCAGOULA	7/16/1998	Thunderstorm Wind	--	0/0	$7,388
PASCAGOULA	12/4/1998	Thunderstorm Wind	--	0/0	$7,388
PASCAGOULA	7/21/2000	Thunderstorm Wind	--	0/0	$1,049
PASCAGOULA	8/10/2000	Thunderstorm Wind	--	0/0	$699
PASCAGOULA	9/5/2000	Thunderstorm Wind	--	0/0	$2,797
PASCAGOULA	11/9/2000	Thunderstorm Wind	--	0/0	$55,947
PASCAGOULA	6/11/2001	Thunderstorm Wind	52 kts. M	0/0	$0
PASCAGOULA	10/13/2001	Thunderstorm Wind	--	0/0	$34,000
PASCAGOULA	6/17/2005	Thunderstorm Wind	50 kts. EG	0/0	$1,850
PASCAGOULA	5/15/2008	Thunderstorm Wind	50 kts. EG	0/0	$1,678
Unincorporated Area					
JACKSON CO.	4/20/1959	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/9/1960	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	1/11/1963	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/10/1965	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	10/30/1967	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	6/12/1968	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/29/1968	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	12/27/1968	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/1/1970	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/2/1971	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/2/1972	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	6/22/1972	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/24/1973	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/8/1973	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/8/1973	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/27/1973	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/26/1974	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	1/10/1975	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/13/1976	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/24/1976	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	6/1/1977	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/2/1977	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/15/1977	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/15/1977	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/3/1979	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/23/1979	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/24/1979	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/13/1980	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/13/1980	Thunderstorm Wind	0 kts.	0/0	$0

Location	Date	Type	Magnitude	Deaths/Injuries	Property Damage*
JACKSON CO.	7/7/1980	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/7/1980	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/10/1981	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/22/1981	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/19/1981	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	6/11/1982	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/5/1982	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/6/1982	Thunderstorm Wind	57 kts.	0/0	$0
JACKSON CO.	1/31/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/1/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/1/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/14/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/3/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	8/5/1983	Thunderstorm Wind	52 kts.	0/0	$0
JACKSON CO.	12/11/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	12/11/1983	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/26/1984	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/26/1984	Thunderstorm Wind	52 kts.	0/0	$0
JACKSON CO.	2/26/1984	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	6/19/1986	Thunderstorm Wind	56 kts.	0/0	$0
JACKSON CO.	10/6/1986	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/26/1987	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/4/1988	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/25/1988	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/31/1988	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	5/6/1989	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	6/8/1989	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	7/20/1989	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	2/10/1990	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	3/15/1990	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	12/22/1990	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/14/1991	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/29/1991	Thunderstorm Wind	0 kts.	0/0	$0
JACKSON CO.	4/20/1992	Thunderstorm Wind	58 kts.	0/0	$0
JACKSON CO.	6/15/1992	Thunderstorm Wind	64 kts.	0/0	$0
JACKSON CO.	11/3/1992	Thunderstorm Wind	0 kts.	0/0	$0
Hurley	3/7/1995	Thunderstorm Wind	0 kts.	0/0	$4,741
VANCLEAVE	3/18/1996	Thunderstorm Wind	--	0/0	$1,535
VANCLEAVE	7/6/1997	Thunderstorm Wind	--	0/0	$750
BIG PT	1/7/1998	Thunderstorm Wind	--	0/0	$443
HELENA	3/3/1999	Thunderstorm Wind	--	0/0	$36,142
WADE	8/2/1999	Thunderstorm Wind	--	0/0	$36,142
ESCATAWPA	8/14/1999	Thunderstorm Wind	--	0/0	$14,457
ESCATAWPA	8/20/2000	Thunderstorm Wind	--	0/0	$699
VANCLEAVE	9/1/2000	Thunderstorm Wind	52 kts. E	0/0	$0
COUNTYWIDE	6/11/2001	Thunderstorm Wind	--	0/0	$13,600

Location	Date	Type	Magnitude	Deaths/Injuries	Property Damage*
COUNTYWIDE	6/11/2001	Thunderstorm Wind	--	0/0	$34,000
VANCLEAVE	12/31/2002	Thunderstorm Wind	--	0/0	$2,008
VANCLEAVE	7/21/2003	Thunderstorm Wind	50 kts. EG	0/0	$5,236
WADE	4/29/2004	Thunderstorm Wind	50 kts. EG	0/0	$1,913
WADE	7/25/2004	Thunderstorm Wind	50 kts. EG	0/0	$638
COUNTYWIDE	8/15/2006	Thunderstorm Wind	50 kts. EG	0/1	$1,195
WADE	11/6/2006	Thunderstorm Wind	50 kts. EG	0/0	$2,389
WADE	3/1/2007	Thunderstorm Wind	50 kts. EG	0/0	$1,742
VANCLEAVE	2/12/2008	Thunderstorm Wind	50 kts. EG	0/0	$2,797
VANCLEAVE	6/29/2008	Thunderstorm Wind	50 kts. EG	0/0	$1,678
HILDA	3/9/2011	Thunderstorm Wind	52 kts. MG	0/0	$0
WADE	3/9/2011	Thunderstorm Wind	60 kts. EG	0/0	$0
VANCLEAVE	5/26/2011	Thunderstorm Wind	55 kts. EG	0/0	$10,707
HILDA	2/18/2012	Thunderstorm Wind	52 kts. EG	0/0	$15,736
VANCLEAVE	7/3/2012	Thunderstorm Wind	55 kts. EG	0/0	$5,245
VANCLEAVE	12/20/2012	Thunderstorm Wind	61 kts. EG	0/0	$0
HURLEY	7/12/2013	Thunderstorm Wind	52 kts. EG	0/0	$1,034
NORTH BILOXI ARPT	4/1/2016	Thunderstorm Wind	60 kts. EG	0/0	$0
VANCLEAVE	5/19/2016	Thunderstorm Wind	60 kts. EG	0/0	$0

*Property damage is reported in 2016 dollars; all damage may not have been reported.
†E = estimated; EG = estimated gust; ES = estimated sustained; MG = measured gust; MS = measured sustained
Source: National Climatic Data Center

PROBABILITY OF FUTURE OCCURRENCES

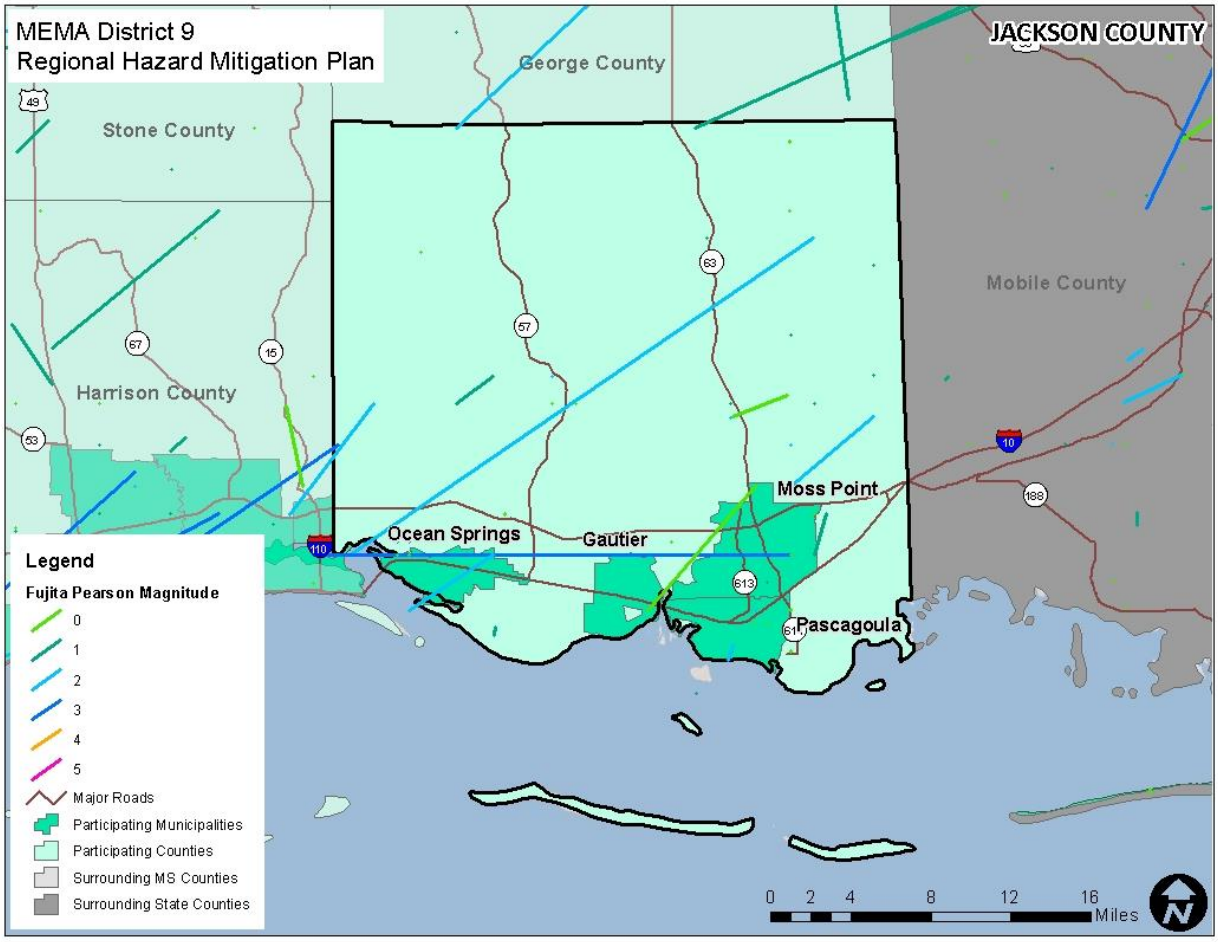
Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

D.2.14 Tornado

LOCATION AND SPATIAL EXTENT

Tornadoes occur throughout the state of Mississippi, and thus in Jackson County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Jackson County is uniformly exposed to this hazard. With that in mind, **Figure D.21** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

FIGURE D.21: HISTORICAL TORNADO TRACKS IN JACKSON COUNTY



Source: National Weather Service Storm Prediction Center

HISTORICAL OCCURRENCES

Tornadoes were at least partially responsible for four disaster declarations in Jackson County in 1980, 1990, 1995, and 2009.[20] According to the National Climatic Data Center, there have been a total of 60 recorded tornado events in Jackson County since 1958, resulting in over $7.9 million (2016 dollars) in property damages.[21] [22] In addition, 19 injuries were reported. The magnitude of these tornadoes ranged from F0 to F2 and EF0 to EF2 in intensity. A summary of these events is presented in **Table D.25**. Detailed information on historic tornado events can be found in **Table D.26**.

[20] A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.
[21] These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through June 2016. It is likely that additional tornadoes have occurred in Jackson County. As additional local data becomes available, this hazard profile will be amended.
[22] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

TABLE D.25: SUMMARY OF TORNADO OCCURRENCES IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	2	0/0	$153,507	$7,675
Moss Point	5	0/0	$0	$0
Ocean Springs	6	0/0	$118,939	$5,664
Pascagoula	4	0/0	$132,885	$7,817
Unincorporated Area	43	0/19	$7,510,682	$129,495
JACKSON COUNTY TOTAL	**60**	**0/19**	**$7,916,013**	**$150,650**

Source: National Climatic Data Center

TABLE D.26: HISTORICAL TORNADO IMPACTS IN JACKSON COUNTY

Location	Date	Magnitude	Deaths/ Injuries	Property Damage*	Details
Gautier					
GAUTIER	4/29/1996	F0	0/0	$153,507	A waterspout moved on shore and caused damage at a small airport. Two light aircraft were destroyed, two others were damaged, and aircraft hangar was slightly damaged and several trees were downed.
GAUTIER	7/2/1999	Waterspout	0/0	$0	Two waterspouts were observed off the Jackson County coast south of Gautier.
Moss Point					
Moss Point	5/9/1995	F1	0/0	$0	Several houses were damaged when a tornado touched down. Path length and width estimated.
PASCAGOULA JCKSN ARP	7/16/2000	F0	0/0	$0	A small tornado briefly touched down near the Pascagoula Jackson Airport resulting in no damage.
MOSS PT	8/10/2000	Funnel Cloud	0/0	$0	A funnel cloud was observed.
MOSS PT	10/6/2000	Funnel Cloud	0/0	$0	A funnel cloud was observed in the Moss Point and Pascagoula areas.
MOSS PT	8/5/2001	Funnel Cloud	0/0	$0	A funnel cloud was observed near the Mississippi and Alabama state line.
Ocean Springs					
Ocean Springs	5/9/1995	F1	0/0	$0	A tornado touched down briefly with only minor damage reported.
OCEAN SPGS	4/29/1996	Waterspout	0/0	$3,070	A waterspout damaged several small sailboats.
OCEAN SPGS	6/17/2005	Funnel Cloud	0/0	$0	A funnel cloud was reported near a school on Government Street.
OCEAN SPGS	11/15/2006	F1	0/0	$59,735	Roof damage occurred to an elementary school, and power lines were blown down when a weak tornado touched down.
OCEAN SPGS	2/13/2007	EF0	0/0	$0	A weak tornado briefly touched down near mile marker 56 on Interstate 10 causing no significant damage.
OCEAN SPGS	4/2/2009	EF0	0/0	$56,133	Several homes received damage in the Pinehurst subdivision just outside of Ocean

Location	Date	Magnitude	Deaths/ Injuries	Property Damage*	Details
					Springs. Fourteen homes received minor damage while two homes had their roofs partially lifted off. A National Weather Service storm survey determined that the damage was the result of a high end EF0 tornado with an estimated 3 second wind gust speed of 75 to 85 mph.
Pascagoula					
PASCAGOULA	3/13/1999	F0	0/0	$0	A tornado briefly touched down but caused no damage one mile east of Pascagoula south of Interstate 10.
PASCAGOULA	8/7/2001	F0	0/0	$34,000	A waterspout moved onshore and caused minor damage at the U.S. Navy Station just south of Pascagoula. The weak tornado damaged several cars, a recreational vehicle, a power pole, and the roof of the fire station. Eyewitness said the tornado/waterspout traveled north up the Pascagoula River for a short distance then dissipated.
PASCAGOULA	3/26/2009	EF0	0/0	$20,208	A weak tornado briefly touched down causing damage around Tucker Street and 8th Street and on Taylor Street. Pascagoula High School experienced light damage when the scoreboard on the football field was blown down and numerous sections of fence were knocked down with debris littering the field. Traffic lights around the area were knocked down and several trees were blown down. Maximum winds associated with this tornado were estimated around 75 mph with a path length around 250 yards and a maximum width of 50 yards.
PASCAGOULA	8/30/2012	EF2	0/0	$78,678	A tornado touched down in the south portion of Pascagoula. Most of the damage was consistent with EF-1 scale damage consisting of downed trees and light structural damage to a few houses. A small area of significant damage...EF-2...occurred where nearly all of the roof of a large house was blown off. Path length 0.7 miles. Path width 40 yards.
Unincorporated Area					
JACKSON CO.	2/26/1958	F2	0/1	$208,350	--
JACKSON CO.	4/6/1963	F1	0/3	$196,775	--
JACKSON CO.	4/27/1966	F2	0/1	$185,843	--
JACKSON CO.	5/8/1969	F1	0/1	$0	--
JACKSON CO.	8/9/1969	--	0/0	$0	--
JACKSON CO.	12/21/1969	F1	0/0	$16,407	During cloudy and rainy weather with thunderstorms, a small twister (funnel not observed) move northeastward. There was scattered wind damage along a 3-mile path, "east on west end of Choctaw St., from intersection of Church St. and east on Mayo St., and in a northeast direction over

Location	Date	Magnitude	Deaths/ Injuries	Property Damage*	Details
					downtown Moss Point" where the storm "was aloft" and "at the time of the storm the clouds turned black and windy." Most of the damage was confined to a 3-block area in northwest section of Moss Point (lat. 30.4° N, long. 88.5° W). Two houses shifted from foundation blocks and received extensive roof damage, a church lost some shingles, several homes lost parts of roofs, a boat house at end of Choctaw lifted from foundation and deposited destroying boat house and heavily damaging boat. A number of trees were blown down, power and gas lines out for a while. Police Department reported no deaths or injuries, damages $5,000.
JACKSON CO.	2/12/1971	F1	0/2	$14,867	Civil Defense Director reported storm moved from SW towards NE. During cloudy weather a small funnel dipped down at 9:30 a.m. in the Wade community where a trailer was overturned, a woman and small girl were injured, and several trees blown over. Damages estimated above $500.
JACKSON CO.	5/8/1971	F2	0/0	$148,675	Storms moved from west towards east. During a period of thunderstorms with hail, a funnel cloud was observed by owners of Kamp Grounds of America, State Highway 57 and I-20. The damage "track was a lazy 'S' oriented from west to east, destroyed one barn - 20% of residential roof and destroyed mobile home (owned by John Bush)...." Report of "sounds like a fast-moving train." The damage area was 1/2 mile E and S of the intersection off Highway 57. Newspaper noted woman "at the Tommy Reed residence nearby the trailer notified the (Ocean Springs) police when she saw the debris outside her house." Civil Defense Director Pascagoula estimated damages $8,500. Hail at 12 noon, 1/4 inch to pea size, covered half the ground for about 5 square miles in the Fontainebleau area.
JACKSON CO.	5/8/1971	F1	0/0	$14,867	Storm moved from W to E. During rainy weather, one small funnel (not observed) unroofed barn and house. About 8 N Moss Point, Highway 63 and 613, north of Escatawpa (lat. 30.5° N, long. 88.5° W). County Civil Defense Director estimated damages $2,000.
JACKSON CO.	2/13/1973	F1	0/1	$13,562	Newspaper noted, "A twister touched down near Old Highway 90 and Seaman Road around midnight Tuesday (13th)…and damaged the camper…owned by A. V. Duda of Shore Drive in Gulf Hills." At this time, movement was reported towards the NW.

Location	Date	Magnitude	Deaths/ Injuries	Property Damage*	Details
					About 1/2 mile away on south side of Solomon Road, halfway between E. Cedar and S. Seaman roads, roof taken off greenhouse and damaged pile of building material on east side of Harry Barnett's house. The tornado reportedly started making a turn to NE as it crossed Solomon Road, and passed on the west side of Charles Tonner's house on the north corner of Solomon and Seaman roads. Mr. Tonner stated, "I was awake and I could hear it roaring. I opened two doors, on the south and the other on the east side. All of a sudden it sopped lightning and raining, then it passed over to the west of my house, then it started raining again. To the north of my house about 20 yards, the bushes 8 to 10 feet tall were twisted and tied in knots. Then it turned NE; a big sycamore tree was split and chewed up about 400 yards away on Solomon Road in Wesley Ladnier's yard." Jackson County Patroman stated, "The trees were in different directions...it appeared that the tornado traveled about a third of a mile before lifting. It cut a path about 30 yards wide." The length of the destructive path believed under 1 1/4 miles and the width from 30 to 80 yards with the average about 40 yards. A small house just north of the Tonner's house was heavily damaged and man inside was pinned under debris; he received small cuts on right arm. Damages estimated over $1,000 to house.
JACKSON CO.	6/13/1974	F0	0/0	$147	--
JACKSON CO.	6/20/1974	F0	0/0	$1,221	--
JACKSON CO.	9/8/1974	F0	0/0	$147	Slight timber damage resulted during the brief tornado touch down.
JACKSON CO.	11/4/1974	F1	0/0	$147	--
JACKSON CO.	1/10/1975	F1	0/0	$1,119	--
JACKSON CO.	1/10/1975	F2	0/0	$1,119,205	--
JACKSON CO.	5/2/1977	F2	0/0	$99,362	--
JACKSON CO.	6/1/1977	F0	0/0	$994	A small tornado briefly touched down 3 1/2 mi. E of the intersection of Highway 63 & 613 or about 7 mi. NNE of Moss Point. Damage was mainly to trees and power lines.
JACKSON CO.	7/15/1977	F0	0/1	$993,618	High winds from an intensifying thunderstorm caused widespread damage throughout the Pascagoula, Moss Point, and Gautier communities. Most of the damage was to boats and marine facilities but also included house trailers, storage sheds, and automobiles. Total damage $80,000. This was believed to be a small tornado.

Location	Date	Magnitude	Deaths/ Injuries	Property Damage*	Details
JACKSON CO.	7/29/1978	--	0/0	$9,235	A waterspout moved inland at Gautier, near Pascagoula. It blew a few backyard buildings around, knocked a tree onto some power lines, did minor damage to one home, a mobile home, and one automobile in the 2 to 4 minutes it lasted.
JACKSON CO.	4/23/1979	F0	0/0	$8,294	--
JACKSON CO.	5/19/1980	F2	0/0	$730,743	--
JACKSON CO.	2/10/1981	F2	0/2	$662,412	--
JACKSON CO.	4/25/1982	F2	0/3	$623,972	A small tornado touched down briefly in the southern area of Moss Point destroying a used furniture store and taking the roof off of a new super market. Minor damage was also reported at several residences. Three people were injured by flying glass. One woman was seriously when her mobile home was overturned. About 1,500 residences were without power from downed power lines.
JACKSON CO.	2/1/1983	F1	0/3	$604,551	A small tornado touched down briefly along Highway 614 three miles southeast of Hurley. The tornado turned over a mobile home.
JACKSON CO.	5/21/1985	F2	0/0	$559,603	--
JACKSON CO.	5/21/1985	F1	0/1	$559,603	--
JACKSON CO.	9/16/1988	F0	0/0	$50,899	A very small tornado touched down briefly in Moss Point. The tornado damaged a roof, ripped the hood off of a car and scattered garbage around.
JACKSON CO.	2/10/1990	F1	0/0	$460,698	A tornado touched down briefly in the Franklin Creek community. It damaged a roof on a commercial business. It damaged several houses and blew down numerous sheds.
Vancleave	3/1/1994	F0	0/0	$8,126	--
JACKSON CO.	12/3/1994	F0	0/0	$0	A tornado briefly touched down near intersection of I 10 and Hwy 613. The tornado was over swamp grass and no damage was reported.
Springs	5/9/1995	--	0/0	$0	A waterspout moved onshore then traveled northeast across Keesler Air Force Base. Trees were knocked down, several cars damaged, and commercial signs damaged. The tornado moved into extreme west Jackson County damaging a mobile home and a couple of storage buildings.
HURLEY	1/18/1996	F0	0/0	$0	The public reported that a tornado touched down momentarily without causing any damage.
VANCLEAVE	8/10/2000	Funnel Cloud	0/0	$0	Several funnel clouds were sighted just north of Vancleave.
ESCATAWPA	8/20/2000	F0	0/0	$2,797	Several trees were knocked down and some homes had windows blown out.

Location	Date	Magnitude	Deaths/ Injuries	Property Damage*	Details
HURLEY	6/11/2001	F0	0/0	$6,800	A weak tornado snapped off tree tops.
VANCLEAVE	8/30/2003	Funnel Cloud	0/0	$0	A funnel cloud was observed.
VANCLEAVE	6/6/2005	Funnel Cloud	0/0	$0	A funnel cloud was observed.
VANCLEAVE	10/18/2007	EF1	0/0	$104,546	A tornado destroyed one mobile home and heavily damaged at least ten others in the Lucasville community just west of Vancleave. In addition, the tornado destroyed several outbuildings, snapped trees, and knocked down power lines.
VANCLEAVE	12/24/2009	EF0	0/0	$2,245	A weak tornado briefly touched down knocking down numerous trees along its path.
FONTAINEBLEAU	4/4/2011	EF1	0/0	$37,476	Roofing was peeled off of a couple of metal commercial buildings in the Fountainbleau area. Windows were blown out of two houses. Large sections of two fences were blown down. Several medium trees were blown down and large tree limbs were snapped. Damage path was approximately 0.1 mile long and 75 yards wide. Estimated strength of tornado was low end EF1.
COLL TOWN	5/26/2011	EF0	0/0	$21,415	A weak tornado touched down about 1/4 mile southwest of the intersection of Mississippi Highway 63 and Mississippi Highway 613, and travelled intermittently for approximately 3 miles to the northeast. A portable office building was flipped over, power lines were blown down, and several trees were knocked down.
OCEAN SPGS ARPT	8/29/2012	EF1	0/0	$41,962	A tornado touched down in the Gulf Park Estates area causing damage to roofs on several houses and blowing out windows. A few trees were downed and large tree branches snapped. Path length approximately 0.4 miles. Path width 40 yards.

*Property damage is reported in 2016 dollars; all damage may not have been reported.
Source: National Climatic Data Center

PROBABILITY OF FUTURE OCCURRENCES

According to historical information, tornado events pose a significant threat to Jackson County. The probability of future tornado occurrences affecting Jackson County is highly likely (100 percent annual probability).

D.2.15 Winter Weather

LOCATION AND SPATIAL EXTENT

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Jackson County is not accustomed to severe winter weather conditions and rarely receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, even relatively small accumulations of snow, ice, or other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there have been a total of four recorded winter storm events in Jackson County since 1996.[23] These events did not result in any property damage.[24] A summary of these events is presented in **Table D.27**. Detailed information on the recorded winter storm events can be found in **Table D.28**.

TABLE D.27: SUMMARY OF WINTER STORM EVENTS IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Jackson County	4	0/0	$0	$0

Source: National Climatic Data Center

TABLE D.28: HISTORICAL WINTER STORM IMPACTS IN JACKSON COUNTY

Location	Date	Type	Deaths/Injuries	Property Damage*
Gautier				
None reported	--	--	--	--
Moss Point				
None reported	--	--	--	--
Ocean Springs				
None reported	--	--	--	--
Pascagoula				
None reported	--	--	--	--
Unincorporated Area				
JACKSON (ZONE)	12/18/1996	Heavy Snow	0/0	$0
JACKSON (ZONE)	12/25/2004	Winter Storm	0/0	$0
JACKSON (ZONE)	1/24/2014	Winter Weather	0/0	$0

[23] These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through June 2016. It is likely that additional winter storm conditions have affected Jackson County.
[24] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

Location	Date	Type	Deaths/Injuries	Property Damage*
JACKSON (ZONE)	1/28/2014	Sleet	0/0	$0

*Property damage is reported in 2016 dollars; all damage may not have been reported.
Source: National Climatic Data Center

There have been several severe winter weather events in Jackson County. The text below describes one of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

December 2004
A mixture of sleet and snow fell off and on during much of Christmas day resulting in a dusting to one half inch of accumulation across much of southwest, south, and coastal Mississippi. Although not heavy, accumulation of ice and snow in coastal Mississippi is unusual and the winter weather impacted transportation. The mixture of sleet and snow caused a number of bridges and overpasses to become icy which resulted in some traffic accidents and closure of some the elevated roadways.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

PROBABILITY OF FUTURE OCCURRENCES

Winter storm events will continue to occur in Jackson County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

OTHER HAZARDS

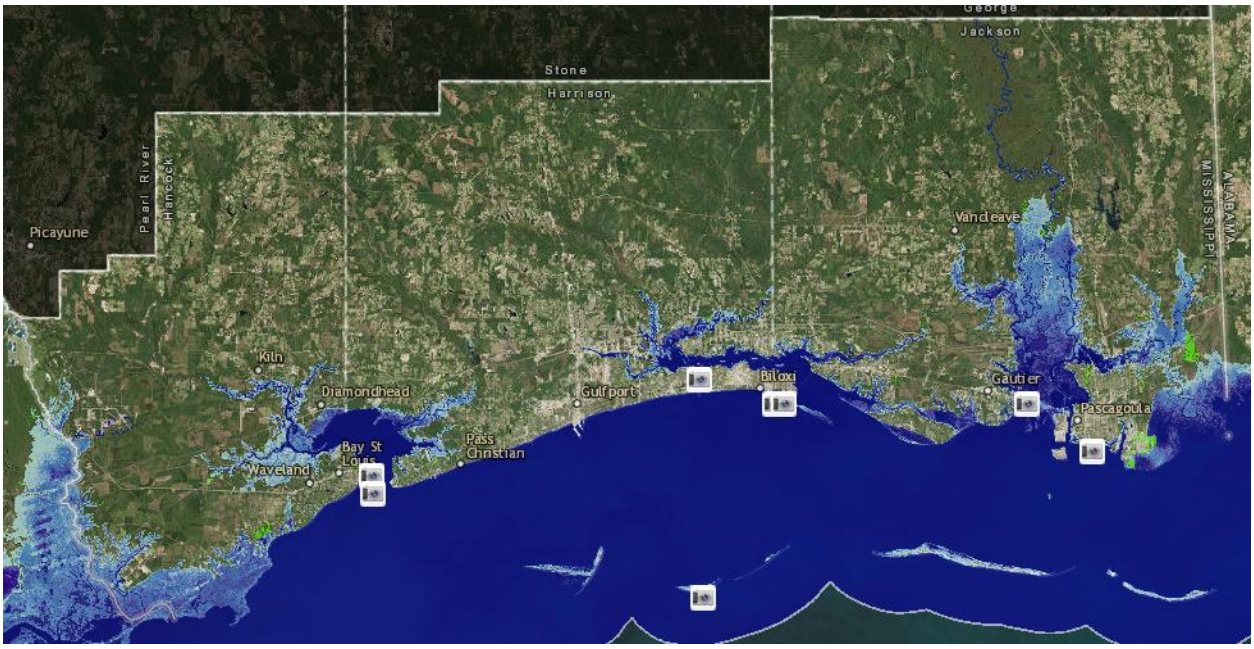
D.2.16 Climate Change/Sea Level Rise

LOCATION AND SPATIAL EXTENT

Climate Change
Climate change can have direct implications on many of the other hazards addressed in this plan since it has the potential to alter the nature and frequency of hazards, including increasing temperature (extreme heat), changes in precipitation (drought, flooding), and more frequent, strong storms (wind, hurricane). Therefore, it is assumed that Jackson County is uniformly exposed to this hazard.

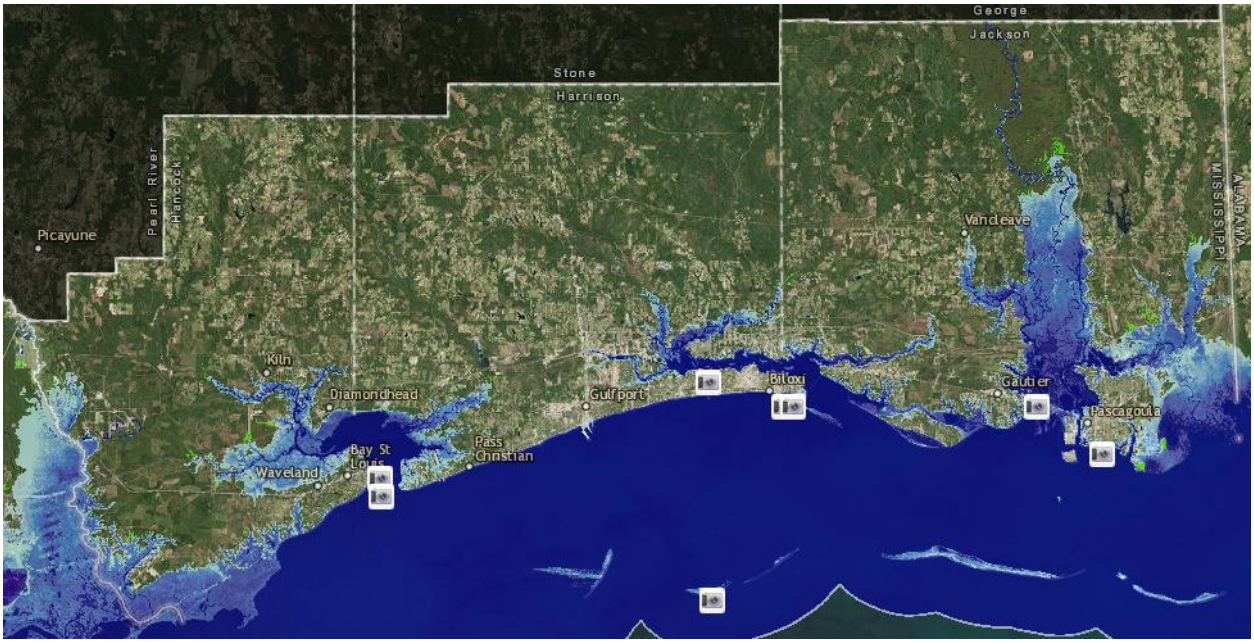
Sea Level Rise
Sea level rise is occurring at a global scale. However, it does not affect areas uniformly and will be more severe in some places. **Figure D.22** identifies areas in MEMA District 9 that would be inundated by water as a result of three feet in sea level rise as per projections by NOAA. The highest level of sea level rise projected by NOAA is shown in **Figure D.23**. This figure shows the inundation areas in the case of six feet of sea level rise. This demonstrates the additional areas that would be impacted beyond the three feet scenario.

FIGURE D.22: THREE FEET SEA LEVEL RISE IN MEMA DISTRICT 9



Source: NOAA

FIGURE D.23: SIX FEET SEA LEVEL RISE IN MEMA DISTRICT 9



Source: NOAA

HISTORICAL OCCURRENCES

Climate Change

According to the *National Climate Assessment*, there have been increasing numbers of days above 95°F and nights above 75°F, and decreasing numbers of extremely cold days since 1970 in the Southeast. Daily

and five-day rainfall intensities have also increased and summers have been either increasingly dry or extremely wet. The number of Category 4 and 5 hurricanes in the Atlantic basin has increased substantially since the early 1980s compared to the historic record that dates back to the mid-1880s. This can be attributed to both natural variability and climate change.

Sea Level Rise
Sea level rise is a slow-onset hazard and specific events/occurrences are not possible to determine.

PROBABILITY OF FUTURE OCCURRENCES

Climate Change
According to the *National Climate Assessment*, temperatures across the Southeast are expected to increase during this century, with shorter-term (year-to-year and decade-to-decade) fluctuations over time due to natural climate variability. Major consequences of warming include significant increases in the number of hot days (95^{o}F or above) and decreases in freezing events. Regional average increases are in the range of 4^{o}F to 8^{o}F by the year 2100.

Projections of future precipitation patterns are less certain than projections for temperature increases. Because the Southeast is located in the transition zone between projected wetter conditions to the north and drier conditions to the southwest, many of the model projections show only small changes relative to natural variations. Additionally, projections further suggest that warming will cause tropical storms to be fewer in number globally, but stronger in force, with more Category 4 and 5 storms, and substantial further increases in extreme precipitation are projected as this century progresses.

Overall, future climate change is considered likely (between 10 and 100 percent annual probability).

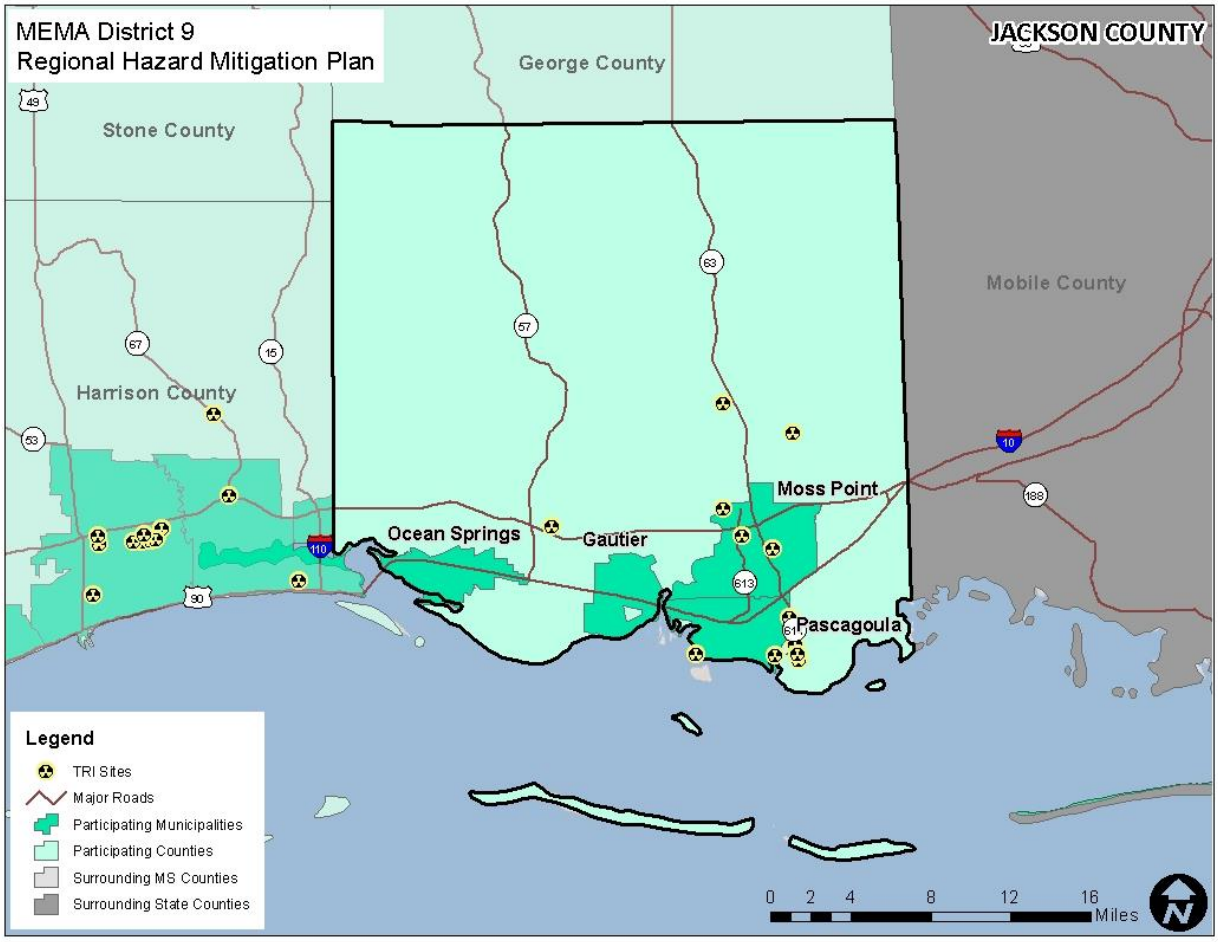
Sea Level Rise
There is still much debate regarding the probability of future occurrence of sea level rise. This section will be updated as more information becomes available. Future sea level rise is considered likely (between 10 and 100 percent annual probability).

D.2.17 Hazardous Materials Incident/Train Derailment

LOCATION AND SPATIAL EXTENT

Jackson County has 11 TRI sites. These sites are shown in **Figure D.24.**

FIGURE D.24: TOXIC RELEASE INVENTORY (TRI) SITES IN JACKSON COUNTY



Source: Environmental Protection Agency

In addition to "fixed" hazardous materials locations, hazardous materials may also impact the county via roadways and railways. Many roads and railways in the county are subject to hazardous materials transport and all roads and railways that permit hazardous material transport are considered potentially at risk to an incident.

HISTORICAL OCCURRENCES

There have been a total of 176 recorded HAZMAT incidents in Jackson County since 1971. These events resulted in over $1.0 million (2016 dollars) in property damage as well as 15 injuries.[25] **Table D.29** summarizes the HAZMAT incidents in Jackson County as reported by PHMSA. Detailed information on these events is presented in **Table D.30.**

[25] Adjusted dollar values were calculated based on the average Consumer Price Index for a given calendar year. This index value has been calculated every year since 1913. For 2016, the August 2016 monthly index was used.

TABLE D.29: SUMMARY OF HAZMAT INCIDENTS IN JACKSON COUNTY

Location	Number of Occurrences	Deaths/Injuries	Property Damage (2016)	Annualized Property Losses
Gautier	10	0/0	$5,556	$142
Moss Point	31	0/3	$509,186	$13,762
Ocean Springs	13	0/5	$231,373	$5,509
Pascagoula	119	0/7	$284,357	$6,319
Unincorporated Area	3	0/0	$1,535	$45
JACKSON COUNTY TOTAL	**176**	**0/15**	**$1,032,007**	**$25,777**

Source: United States Department of Transportation Pipeline and Hazardous Materials Safety Administration

TABLE D.30: HAZMAT INCIDENTS IN JACKSON COUNTY

Report Number	Date	City	Mode	Serious Incident?	Deaths/ Injuries	Damages ($)*	Quantity Released
Gautier							
I-1977030472	2/22/1977	GAUTHIER	Highway	No	0/0	$0	0
I-1981010388	12/8/1980	GAUTIER	Highway	No	0/0	$0	55 LGA
I-1985060052	5/20/1985	GAUTIER	Highway	No	0/0	$0	10 LGA
I-1997120989	12/5/1997	GAUTIER	Highway	No	0/0	$2,078	100 LGA
I-1998050760	2/24/1998	GAUTIER	Highway	No	0/0	$59	0.5 LGA
I-1998071333	6/19/1998	GAUTIER	Highway	No	0/0	$185	2.6 LGA
I-2004061465	6/9/2004	GAUTIER	Highway	No	0/0	$0	0
I-2011030410	2/24/2011	GAUTIER	Highway	No	0/0	$3,234	50 LGA
I-2011040139	3/23/2011	GAUTIER	Highway	No	0/0	$0	0.085938 LGA
I-2014060126	5/23/2014	GAUTIER	Highway	No	0/0	$0	0.007812 LGA
Moss Point							
I-1979030340	2/1/1979	MOSS POINT	Highway	No	0/0	$0	100 LGA
I-1980070813	6/27/1980	MOSS POINT	Highway	No	0/0	$0	20 LGA
I-1982040264	3/26/1982	MOSS POINT	Highway	No	0/0	$0	20 LGA
I-1982120264	12/9/1982	MOSS POINT	Rail	No	0/0	$0	1 SLB
I-1983060152	5/27/1983	MOSS POINT	Highway	Yes	0/0	$0	0
I-1983060152	5/27/1983	MOSS POINT	Highway	Yes	0/0	$0	1,700 SLB
I-1985020262	2/7/1985	MOSS POINT	Highway	No	0/0	$0	12,692 GCF
I-1988020519	2/11/1988	MOSS POINT	Rail	No	0/0	$0	0.12 LGA
I-1989060133	5/18/1989	MOSS POINT	Highway	No	0/0	$0	0.25 LGA
I-1990080718	7/25/1990	MOSS POINT	Highway	No	0/0	$10,489	55 LGA
I-1990120212	11/3/1990	MOSS POINT	Highway	No	0/0	$37	2 LGA
I-1990120213	11/3/1990	MOSS POINT	Highway	No	0/1	$0	1 LGA
I-1995081086	7/25/1995	MOSS POINT	Highway	No	0/0	$435	30 LGA
I-1995091387	9/8/1995	MOSS POINT	Rail	No	0/1	$0	1 LGA
I-1996030760	3/12/1996	MOSS POINT	Highway	No	0/0	$0	5 LGA
I-1997020237	7/8/1996	MOSS POINT	Highway	No	0/1	$0	160 SLB
I-1997060725	5/23/1997	MOSS POINT	Highway	No	0/0	$35,715	60 LGA
I-1999091811	9/17/1999	MOSS POINT	Highway	No	0/0	$0	1 LGA
I-2000120388	9/3/2000	MOSS POINT	Highway	No	0/0	$0	2 LGA
I-2001030532	3/3/2001	MOSS POINT	Highway	No	0/0	$0	2 LGA

Report Number	Date	City	Mode	Serious Incident?	Deaths/ Injuries	Damages ($)*	Quantity Released
I-2001060219	5/29/2001	MOSS POINT	Highway	No	0/0	$0	0.25 LGA
I-2001080529	7/16/2001	MOSS POINT	Highway	No	0/0	$0	0
I-2005040358	4/16/2004	MOSS POINT	Highway	Yes	0/0	$143,618	1,643 LGA
I-2006101616	9/19/2006	MOSSPOINT	Highway	No	0/0	$15,053	98 LGA
I-2007050473	1/4/2007	MOSS POINT	Highway	Yes	0/0	$256,486	1,290 LGA
I-2013040017	3/21/2013	MOSS POINT	Highway	No	0/0	$0	0.01671 GCF
E-2013100210	7/17/2013	MOSS POINT	Rail	No	0/0	$46,525	0.13368 GCF
I-2013100011	9/20/2013	MOSS POINT	Rail	No	0/0	$827	0.6684 GCF
E-2014080019	7/21/2014	MOSS PONT	Highway	No	0/0	$0	0.004178 GCF
I-2014120269	11/12/2014	MOSS POINT	Rail	No	0/0	$0	0.01671 GCF
E-2014120220	11/30/2014	MOSS POINT	Highway	No	0/0	$0	0.25 LGA
Ocean Springs							
I-1974060025	5/26/1974	OCEAN SPRINGS	Highway	No	0/0	$0	0
I-1975080280	7/28/1975	OCEAN SPRINGS	Highway	No	0/0	$0	0
I-1990120636	11/20/1990	OCEAN SPRINGS	Highway	Yes	0/4	$130,838	5,000 LGA
I-1991040453	3/23/1991	OCEAN SPRINGS	Highway	No	0/0	$141	75 LGA
I-1993030215	1/30/1993	OCEAN SPRINGS	Highway	Yes	0/0	$16,083	150 LGA
I-1996090555	8/5/1996	OCEAN SPRINGS	Rail	No	0/0	$7,675	100 LGA
I-1996121072	11/20/1996	OCEAN SPRINGS	Rail	Yes	0/1	$0	15 LGA
I-2000050942	2/4/2000	OCEAN SPRINGS	Highway	Yes	0/0	$17,134	320 SLB
I-2004091344	2/2/2004	OCEAN SPRINGS	Highway	No	0/0	$0	0.001308 LGA
I-2008030153	8/31/2007	OCEAN SPRINGS	Highway	Yes	0/0	$0	80 LGA
E-2008120026	11/14/2008	OCEAN SPRINGS	Highway	No	0/0	$0	3 LGA
I-2010050392	4/21/2009	OCEAN SPRINGS	Highway	No	0/0	$59,501	10 LGA
I-2010060210	7/21/2009	OCEAN SPRINGS	Highway	No	0/0	$0	3 LGA
Pascagoula							
I-1971110168	11/9/1971	PASEAGOULA	Highway	No	0/0	$0	0
I-1973060159	5/31/1973	PASCAGOULA	Highway	No	0/0	$0	0
I-1974050542	1/31/1974	PASCAGOULA	Highway	No	0/0	$0	0
I-1974090345	8/13/1974	PASCAGOULA	Highway	No	0/1	$0	0
I-1974120237	11/20/1974	PASCAGOULA	Rail	No	0/1	$0	0
I-1975040178	3/24/1975	PASCAGOULA	Highway	No	0/0	$0	0
I-1975060436	5/15/1975	PASCAGOULA	Highway	No	0/0	$0	0
I-1975060062	5/22/1975	PASCAGOULA	Highway	No	0/0	$0	0
I-1976040745	4/15/1976	PASCAGOULA	Rail	No	0/1	$0	5 LGA
I-1976091099	9/21/1976	PASCAGOULA	Highway	Yes	0/0	$0	1,500 LGA
I-1977010383	11/1/1976	PASCAGOLA	Highway	No	0/0	$0	0
I-1976110815	11/3/1976	PASCAGOULA	Highway	No	0/0	$0	0
I-1977071609	6/20/1977	PASCAGOULA	Highway	No	0/0	$0	2 LGA
I-1977070910	7/5/1977	PASCAGOULA	Highway	No	0/0	$0	0
I-1978051546	5/22/1978	PASCOUGLA	Highway	No	0/0	$0	5 LGA
I-1978061053	5/30/1978	PASCAGOULA	Rail	No	0/0	$0	0
I-1978061054	5/30/1978	PASCAGOULA	Rail	No	0/0	$0	0
I-1978090515	8/16/1978	PASCAGOULA	Rail	No	0/0	$0	1 LGA
I-1978090080	8/20/1978	PASCAGOULA	Highway	Yes	0/0	$0	4,246 LGA
I-1978110271	10/6/1978	PASCAGOULA	Highway	No	0/0	$0	2 LGA

Report Number	Date	City	Mode	Serious Incident?	Deaths/ Injuries	Damages ($)*	Quantity Released
I-1978101450	10/12/1978	PASCAGOULA	Rail	No	0/1	$0	5 LGA
I-1979051170	3/30/1979	PASCAGOULA	Highway	No	0/0	$0	5 LGA
I-1979051067	5/15/1979	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1979110452	9/19/1979	PASCAGOULA	Highway	No	0/0	$0	25 LGA
I-1979110453	10/18/1979	PASCAGOULA	Highway	No	0/0	$0	105 LGA
I-1979110454	10/22/1979	PASCAGOULA	Highway	No	0/0	$0	25 LGA
I-1979110455	10/24/1979	PASCAGOULA	Highway	No	0/0	$0	10 LGA
I-1979110178	10/31/1979	PASCAGOULA	Highway	Yes	0/0	$0	413 LGA
I-1979110456	11/1/1979	PASCAGOULA	Highway	No	0/0	$0	50 LGA
I-1979110457	11/2/1979	PASCAGOULA	Highway	No	0/0	$0	20 LGA
I-1979110458	11/5/1979	PASCAGOULA	Highway	No	0/0	$0	5 LGA
I-1979120327	11/21/1979	PASCAGOULA	Highway	No	0/0	$0	10 LGA
I-1980011216	12/14/1979	PASCAGOULA	Highway	No	0/0	$0	25 LGA
I-1980050559	3/6/1980	PASCAGOULA	Highway	No	0/0	$0	2 LGA
I-1980050189	3/22/1980	PASCAGOULA	Highway	No	0/0	$0	3 LGA
I-1980040503	4/9/1980	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1980041669	4/15/1980	PASCAGOULA	Rail	No	0/0	$0	1 LGA
I-1980061490	7/7/1980	PASCAGOULA	Rail	No	0/0	$0	3 LGA
I-1981030030	2/18/1981	PASCAGOULA	Rail	No	0/1	$0	0
I-1981070008	4/29/1981	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1981070889	7/9/1981	PASCAGOULA	Rail	No	0/0	$0	0
I-1981100341	9/26/1981	PASCAGOULA	Rail	No	0/0	$0	0
I-1982060113	5/12/1982	PASCAGOULA	Rail	No	0/0	$0	10 LGA
I-1982110279	10/28/1982	PASCAGOULA	Rail	No	0/0	$0	0
I-1983020294	1/28/1983	PASCAGOULA	Rail	No	0/0	$0	1 SLB
I-1983030288	3/9/1983	PASCAGOULA	Rail	No	0/0	$0	1 SLB
I-1983050365	4/29/1983	PASCAGOULA	Highway	No	0/0	$0	20 LGA
I-1984020061	2/1/1984	PASCAGOULA	Rail	No	0/0	$0	0
I-1984110294	11/7/1984	PASCAGOULA	Rail	No	0/0	$0	0
I-1986020308	2/21/1986	PASCAGOULA	Rail	No	0/0	$0	0
I-1987010215	12/31/1986	PASCAGOULA	Highway	Yes	0/0	$0	2,000 LGA
I-1987040267	4/9/1987	PASCAGOULA	Rail	No	0/0	$0	1 LGA
I-1987040267	4/9/1987	PASCAGOULA	Rail	No	0/0	$0	1 LGA
I-1987100269	9/15/1987	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1988080379	4/25/1988	PASCAGOULA	Highway	No	0/0	$0	5 LGA
I-1989100554	9/5/1989	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1989100448	10/1/1989	PASCAGOULA	Highway	No	0/0	$0	10 LGA
I-1989110451	11/19/1989	PASCAGOULA	Highway	No	0/0	$0	4 LGA
I-1990020627	2/16/1990	PASCAGOULA	Highway	No	0/0	$160	50 LGA
I-1990050152	4/24/1990	PASCAGOULA	Rail	No	0/0	$0	1 LGA
I-1990090136	8/26/1990	PASCAGOULA	Highway	No	0/0	$282	10 LGA
I-1991020701	1/2/1991	PASCAGOULA	Highway	No	0/0	$451	0.0625 LGA
I-1991020648	1/22/1991	PASCAGOULA	Highway	No	0/0	$345	0.0625 LGA
I-1991090834	9/13/1991	PASCAGOULA	Highway	No	0/0	$690	5 LGA
I-1992040474	3/12/1992	PASCAGOULA	Highway	No	0/0	$618	0.5 SLB
I-1992070667	6/8/1992	PASCAGOULA	Highway	No	0/0	$60	0.25 SLB

Report Number	Date	City	Mode	Serious Incident?	Deaths/ Injuries	Damages ($)*	Quantity Released
I-1993030066	1/26/1993	PASCAGOULA	Highway	No	0/0	$575	0.03125 LGA
I-1994040825	3/22/1994	PASCAGOULA	Highway	No	0/0	$3,429	0.25 LGA
I-1994070002	6/15/1994	PASCAGOULA	Highway	No	0/0	$0	0.000528 LGA
I-1994070081	6/30/1994	PASCAGOULA	Highway	No	0/0	$0	0.003906 LGA
I-1995050823	4/19/1995	PASCAGOULA	Highway	No	0/0	$0	0
I-1995080711	7/13/1995	PASCAGOULA	Highway	No	0/0	$0	15 LGA
I-1996010997	1/19/1996	PASCAGOULA	Highway	No	0/0	$31	20 LGA
I-1996030874	3/5/1996	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1996050207	4/10/1996	PASCAGOULA	Highway	No	0/0	$0	0.5 LGA
I-1996080687	5/22/1996	PASCAGOULA	Highway	No	0/0	$0	0.125 LGA
I-1996120520	9/10/1996	PASCAGOULA	Highway	Yes	0/0	$0	1,000 LGA
I-1996100255	9/27/1996	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-1997030890	3/3/1997	PASCAGOULA	Highway	No	0/0	$56	37 LGA
I-1997081026	7/30/1997	PASCAGOULA	Highway	No	0/2	$0	3 LGA
I-1997100740	9/17/1997	PASCAGOULA	Highway	No	0/0	$705	1 LGA
I-1999010819	1/8/1999	PASCAGOULA	Highway	Yes	0/0	$1,590	350 LGA
I-1999050081	2/12/1999	PASCAGOULA	Highway	No	0/0	$7	5 LGA
I-1999040504	3/3/1999	PASCAGOULA	Highway	No	0/0	$145	100 LGA
I-1999061431	5/6/1999	PASCAGOULA	Highway	No	0/0	$14	10 LGA
I-1999082065	7/13/1999	PASCAGOULA	Highway	No	0/0	$2,891	0
I-2000050946	5/5/2000	PASCAGOULA	Highway	No	0/0	$21	15 LGA
I-2000061173	5/23/2000	PASCAGOULA	Highway	No	0/0	$16,651	10 LGA
I-2000080290	7/10/2000	PASCAGOULA	Highway	No	0/0	$0	0.5 LGA
I-2000110079	10/18/2000	PASCAGOULA	Rail	No	0/0	$0	0.25 LGA
I-2001010960	1/13/2001	PASCAGOULA	Rail	No	0/0	$0	1 LGA
I-2001081278	8/14/2001	PASCAGOULA	Highway	No	0/0	$0	5 LGA
I-2001081198	8/16/2001	PASCAGOULA	Highway	No	0/0	$2,720	2 LGA
I-2002011771	11/2/2001	PASCAGOULA	Highway	No	0/0	$0	0.125 LGA
I-2002020962	11/28/2001	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-2002020961	12/3/2001	PASCAGOULA	Highway	No	0/0	$0	2 LGA
I-2002020632	12/28/2001	PASCAGOULA	Rail	No	0/0	$0	0.125 GCF
I-2002060158	4/10/2002	PASCAGOULA	Highway	No	0/0	$134	20 LGA
I-2002061440	5/17/2002	PASCAGOULA	Highway	No	0/0	$0	1 LGA
I-2002100644	9/11/2002	PASCAGOULA	Rail	No	0/0	$0	0.25 LGA
I-2002100020	9/24/2002	PASCAGOULA	Highway	Yes	0/0	$201	146 LGA
I-2003020680	2/10/2003	PASCAGOULA	Highway	No	0/0	$0	0.020625 LGA
I-2003100595	9/9/2003	PASCAGOULA	Highway	No	0/0	$0	8 LGA
I-2004090557	9/2/2004	PASCAGOULA	Highway	No	0/0	$0	0.125 LGA
I-2005020749	1/3/2005	PASCAGOULA	Rail	No	0/0	$3,700	2 LGA
I-2006071418	7/9/2006	PASCAGOULA	Rail	No	0/0	$2,987	10 LGA
E-2007050096	4/12/2007	PASCAGOULA	Highway	No	0/0	$0	0.000654 LGA
I-2008070479	12/24/2007	PASCAGOULA	Highway	Yes	0/0	$68,382	5 LGA
X-2008060157	5/23/2008	PASCAGOULA	Rail	No	0/0	$5,593	0.08355 GCF
I-2008090770	8/24/2008	PASLAGOULA	Highway	Yes	0/0	$145,660	2 LGA
X-2011100149	9/22/2011	PASCAGOULA	Rail	No	0/0	$2,142	0.1 LGA
X-2011100149	9/22/2011	PASCAGOULA	Rail	No	0/0	$2,142	0.1 LGA

Report Number	Date	City	Mode	Serious Incident?	Deaths/ Injuries	Damages ($)*	Quantity Released
X-2011100149	9/22/2011	PASCAGOULA	Rail	No	0/0	$2,142	0.1 LGA
X-2011100149	9/22/2011	PASCAGOULA	Rail	No	0/0	$2,142	0.1 LGA
X-2012030191	3/3/2012	Pascagoula	Rail	No	0/0	$1,574	0.06684 GCF
X-2013060347	6/18/2013	Pascagoula	Rail	Yes	0/0	$3,102	0.2 LGA
X-2013080210	7/30/2013	Pascagoula	Rail	No	0/0	$2,585	1 LGA
X-2014080049	7/23/2014	Pascagoula	Rail	No	0/0	$1,933	1 LGA
X-2016070541	7/15/2016	Pascagoula	Rail	Yes	0/0	$8,500	1.3368 GCF
Unincorporated Area							
I-1982090508	9/4/1982	ESCATAWPA	Highway	No	0/0	$0	10 LGA
I-1996050948	5/17/1996	EAST MOSS POINT	Highway	Yes	0/0	$0	300 LGA
I-1996080916	7/16/1996	ESCATAWPA	Highway	No	0/0	$1,535	1 LGA

*Property damage is reported in 2016 dollars; all damage may not have been reported.
Source: United States Department of Transportation Pipeline and Hazardous Materials Safety Administration

PROBABILITY OF FUTURE OCCURRENCES

Given the location of 11 toxic release inventory sites in Jackson County and prior roadway and railway incidents, it is highly likely (100 percent annual probability) that a hazardous material incident may occur in the county. County and city officials are mindful of this possibility and take precautions to prevent such an event from occurring. Furthermore, there are detailed plans in place to respond to an occurrence.

D.2.18 Infectious Disease

LOCATION AND SPATIAL EXTENT

Due to the nature of a public health/emerging disease threat, it is difficult to identify a precise location where this type of event would occur. Moreover, a large-scale event would have impacts that spread throughout the county. Therefore, all areas in Jackson County are considered equally susceptible to infectious diseases.

HISTORICAL OCCURRENCES

Mosquito-borne illness in Mississippi include West Nile virus, Chikungunya virus, and Zika virus. These illnesses affect birds, animals, and humans, causing flu-like symptoms in people who are bitten by infected mosquitoes. Occasionally illness can be severe, leading to meningitis or encephalitis. According to the Mississippi State Department of Health (MSDH), there has been one reported case of West Nile Virus in Jackson County as of November 2016. **Table D.31** summarizes the mosquito-borne illnesses in humans reported in the county.

TABLE D.31: SUMMARY OF MOSQUITO-BORNE ILLNESSES IN JACKSON COUNTY

Location	West Nile Virus	Chikungunya	Zika	Other*	Deaths
Jackson County	1	0	0	0	0

*Other mosquito-borne illnesses include La Crosse encephalitis, St. Louis encephalitis, and Eastern Equine encephalitis.
Source: Mississippi State Department of Health

Diseases like influenza and norovirus are regularly occurring health issues in Jackson County. These conditions are not legally reportable to county or state public health agencies, so data on disease incidence is not readily available. MSDH relies upon selected sentinel health practitioners across the state to report the percentage and total patient visits consistent with an influenza-like illness (ILI): fever of 100^{o}F or higher and cough or sore throat. Reports are used to estimate the state's ILI rate and the magnitude of state's influenza activity on a weekly basis. Reports represent only the distribution of flu in the state, not an actual count of all flu cases statewide.

PROBABILITY OF FUTURE OCCURRENCES

Due to some recent incidents that have been recorded across the State of Mississippi and in Jackson County, future occurrences are considered possible (between 1 and 10 percent annual probability).

D.2.19 Conclusions on Hazard Risk

The hazard profiles presented in this section were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its "How-to" guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

HAZARD EXTENT

Table D.32 describes the extent of each hazard identified for Jackson County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

TABLE D.32: EXTENT OF JACKSON COUNTY HAZARDS

Flood-related Hazards	
Dam and Levee Failure	Dam failure extent is defined using the Mississippi Division of Environmental Quality classifications which include Low, Significant, and High. One dam is classified as high-hazard in Jackson County.
Erosion	The extent of erosion can be defined by the measurable rate of erosion that occurs. Some areas of the barrier islands are eroding at 6 to 8 meters per year in Jackson County according to the USGS Coastal and Marine Geology Program's U.S. Gulf of Mexico Interactive Map.
Flood	Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest flood recorded for the county was at Pascagoula River at Graham Ferry. The maximum historic crest was recorded at 20.10 feet, or 0.1 feet

above the major flood stage (reported on February 28, 1961). Additional historic crest heights and the corresponding flood categories are in the table below.

Location/ Jurisdiction	Date	Maximum Historic Crest (ft)	Flood categories			
			Action Stage (ft)	Flood Stage (ft)	Moderate Flood Stage (ft)	Major Flood Stage (ft)
Jackson County						
PASCAGOULA RIVER AT GRAHAM FERRY	2/28/1961	20.10	15	16	18	20
ESCATAWPA RIVER ABOVE ORANGE GROVE	9/28/1998	11.90	6	8	12	15

Storm Surge	Storm surge can be defined by the depth of inundation which is defined by the category of hurricane/tropical storm. Since Jackson County could easily be impacted by a Category 3 storm, depth of inundation could be at least 9 feet in many areas.
Fire-related Hazards	
Drought	Drought extent is defined by the U.S. Drought Monitor classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor classifications, the most severe drought condition is Exceptional. Jackson County has received this ranking twice over the 17-year reporting period.
Lightning	According to the Vaisala's flash density map, Jackson County is located in an area that experiences 4 to 12 and up lightning flashes per square kilometer per year. It should be noted that future lightning occurrences may exceed these figures.
Wildfire	Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Jackson County in any year 161 in 2011. The greatest number of acres to burn in the county in a single year occurred in 2016 when 5,020 acres were burned. Information on specific occurrences of wildfire and the most severe fires in each jurisdiction is not available. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.
Geologic Hazards	
Earthquake	Earthquake extent can be measured by the Richter Scale, the Modified Mercalli Intensity (MMI) scale, and the distance of the epicenter from Jackson County. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Jackson County.
Wind-related Hazards	
Extreme Cold	The extent of extreme cold can be defined by the minimum temperature reached. Official long term temperature records are not kept for any areas in Jackson County. However, the temperature has previously ranged from 15 to 20 degrees Fahrenheit in southwest and coastal Mississippi (reported on December 18, 1996).
Extreme Heat	The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Jackson County. However, the highest recorded temperature in Beaumont (northwest of the county) was 105°F and heat index values were recorded as high as 115°F (reported in July 2000).
Hailstorm	Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Jackson County was 3.00 inches (reported on April 19, 1965). It should be noted that future events may exceed this.

Hurricane and Tropical Storm	Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to traverse directly through Jackson County was Hurricane Frederic, a Category 3 storm which carried tropical force winds of 97 knots upon arrival in the county.
Severe Thunderstorm/High Wind	Thunderstorm extent is defined by wind speeds reported. The strongest recorded wind event in Jackson County was 65 knots (reported on April 14, 2014). It should be noted that future events may exceed these historical occurrences.
Tornado	Tornado hazard extent is measured by the Fujita/Enhanced Fujita. The greatest magnitude reported in Jackson County was an EF2 (reported on August 30, 2012).
Winter Weather	The extent of winter storms can be measured by the amount of snowfall received (in inches). The greatest snowfall reported in Jackson County was 1-2 inches (reported on December 18, 1996).
Other Hazards	
Climate Change/Sea Level Rise	It is still uncertain what the extent of climate change will be in the future. However, increasing temperature (extreme heat), changes in precipitation (drought, flooding), and more frequent, stronger storms (wind, hurricanes) can be expected. Sea level rise is defined by the areas impacted, but is more often associated with the amount of sea level rise that is expected to take place. Although it is difficult to predict an exact amount of rise, the Climate Change Surging Seas Report intermediate high sea level rise scenario projects 1 foot of rise locally by 2050 and 3.7 feet by 2100.
Hazardous Materials Incident/Train Derailment	According to USDOT PHMSA, the largest hazardous materials incident reported in Jackson County was 12,692 GCF released on the highway (reported on February 7, 1985). It should be noted that larger events are possible.
Infectious Disease	An infectious disease threat could have large-scale effects throughout the county and may cause illness in many people. Possible impacts from a disease threat depend largely on the impacted population, but might include anything from absenteeism and loss of productivity in the workplace to death or serious illness to humans or livestock. A serious disease threat could affect many thousands of people.

PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Jackson County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a "Priority Risk Index" (PRI). More information on the PRI and how it was calculated can be found in Section 5.21.2.

Table D.33 summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

TABLE D.33: SUMMARY OF PRI RESULTS FOR JACKSON COUNTY

Hazard	Category/Degree of Risk					
	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood-related Hazards						

Hazard	Category/Degree of Risk					
	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Dam and Levee Failure	Possible	Critical	Small	Less than 6 hours	Less than 6 hours	**2.4**
Erosion	Likely	Limited	Small	More than 24 hours	More than 1 week	**2.4**
Flood	Highly Likely	Critical	Moderate	6 to 12 hours	Less than 24 hours	**3.2**
Storm Surge	Highly Likely	Critical	Moderate	More than 24 hours	Less than 24 hours	**3.0**
Fire-related Hazards						
Drought	Likely	Minor	Large	More than 24 hours	More than 1 week	**2.5**
Lightning	Highly Likely	Limited	Negligible	6 to 12 hours	Less than 6 hours	**2.4**
Wildfire	Highly Likely	Minor	Small	Less than 6 hours	Less than 1 week	**2.6**
Geologic Hazards						
Earthquake	Possible	Minor	Moderate	Less than 6 hours	Less than 6 hours	**2.0**
Wind-related Hazards						
Extreme Cold	Possible	Minor	Large	More than 24 hours	Less than 1 week	**2.1**
Extreme Heat	Highly Likely	Minor	Large	More than 24 hours	More than 1 week	**2.8**
Hailstorm	Highly Likely	Limited	Moderate	6 to 12 hours	Less than 6 hours	**2.8**
Hurricane and Tropical Storm	Highly Likely	Critical	Large	More than 24 hours	Less than 24 hours	**3.2**
Severe Thunderstorm/ High Wind	Highly Likely	Critical	Moderate	6 to 12 hours	Less than 6 hours	**3.1**
Tornado	Highly Likely	Critical	Small	Less than 6 hours	Less than 6 hours	**3.0**
Winter Weather	Likely	Minor	Moderate	More than 24 hours	Less than 24 hours	**2.1**
Other Hazards						
Climate Change/Sea Level Rise	Likely	Minor	Large	More than 24 hours	More than 1 week	**2.5**
Hazardous Materials Incident/ Train Derailment	Highly Likely	Limited	Small	Less than 6 hours	Less than 24 hours	**2.8**
Infectious Disease	Possible	Limited	Large	More than 24 hours	More than 1 week	**2.5**

D.2.20 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Jackson County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table D.34**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Jackson County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section D.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates.

Some priorities have changed since the previous plans were adopted due to the merging of multiple local plans to form this regional plan; however, most priorities remain the same.

TABLE D.34: CONCLUSIONS ON HAZARD RISK FOR JACKSON COUNTY

HIGH RISK	Hurricane and Tropical Storm Flood Severe Thunderstorm/High Wind Storm Surge Tornado
MODERATE RISK	Hailstorm Hazardous Materials Incident/Train Derailment Extreme Heat Wildfire Drought Climate Change/Sea Level Rise Infectious Disease
LOW RISK	Lightning Dam and Levee Failure Erosion Winter Weather Extreme Cold Earthquake

D.3 JACKSON COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Jackson County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

D.3.1 Asset Inventory

Table D.35 lists the estimated number of buildings, parcels, and the total value of improvements for Jackson County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for every community, data obtained from Hazus-MH 3.2 inventory was utilized to supplement the analysis where gaps existed.

TABLE D.35: IMPROVED PROPERTY IN JACKSON COUNTY

Location	Counts of Buildings	Counts of Parcels	Total Value of Improvements
Gautier	7,194	5,573	$397,918,520
Moss Point	10,825	8,690	$405,337,190
Ocean Springs	10,325	8,072	$905,620,110

Location	Counts of Buildings	Counts of Parcels	Total Value of Improvements
Pascagoula	14,967	9,886	$852,583,870
Unincorporated Area	56,987	48,414	$2,431,927,960
JACKSON COUNTY TOTAL	**100,298**	**80,635**	**$4,993,387,650**

Source: MDEQ, Hazus-MH 3.2

Table D.36 lists the critical facilities located in Jackson County by type according to data provided by local government officials.

In addition, **Figure D.25** shows the locations of critical facilities in Jackson County. **Table D.52**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. Further, it should be noted that the table below may show that some communities do not have any critical facilities of in certain type, when in reality, that particular type of facility may actually be located within the community. This may occur because spatial data for that facility type was not available or because the facility may have been classified under a different category type for that particular community.

TABLE D.36: CRITICAL FACILITY INVENTORY IN JACKSON COUNTY

Location	Communications	EOC	Fire Stations	Medical	Police Station	Power/ Gas	Private/Non-Profit
Gautier	0	0	3	0	1	0	0
Moss Point	0	0	4	0	1	0	0
Ocean Springs	0	1	4	2	3	0	2
Pascagoula	1	1	3	2	2	1	17
Unincorporated Area	4	1	31	0	1	0	1
JACKSON COUNTY TOTAL	**5**	**3**	**45**	**4**	**8**	**1**	**20**

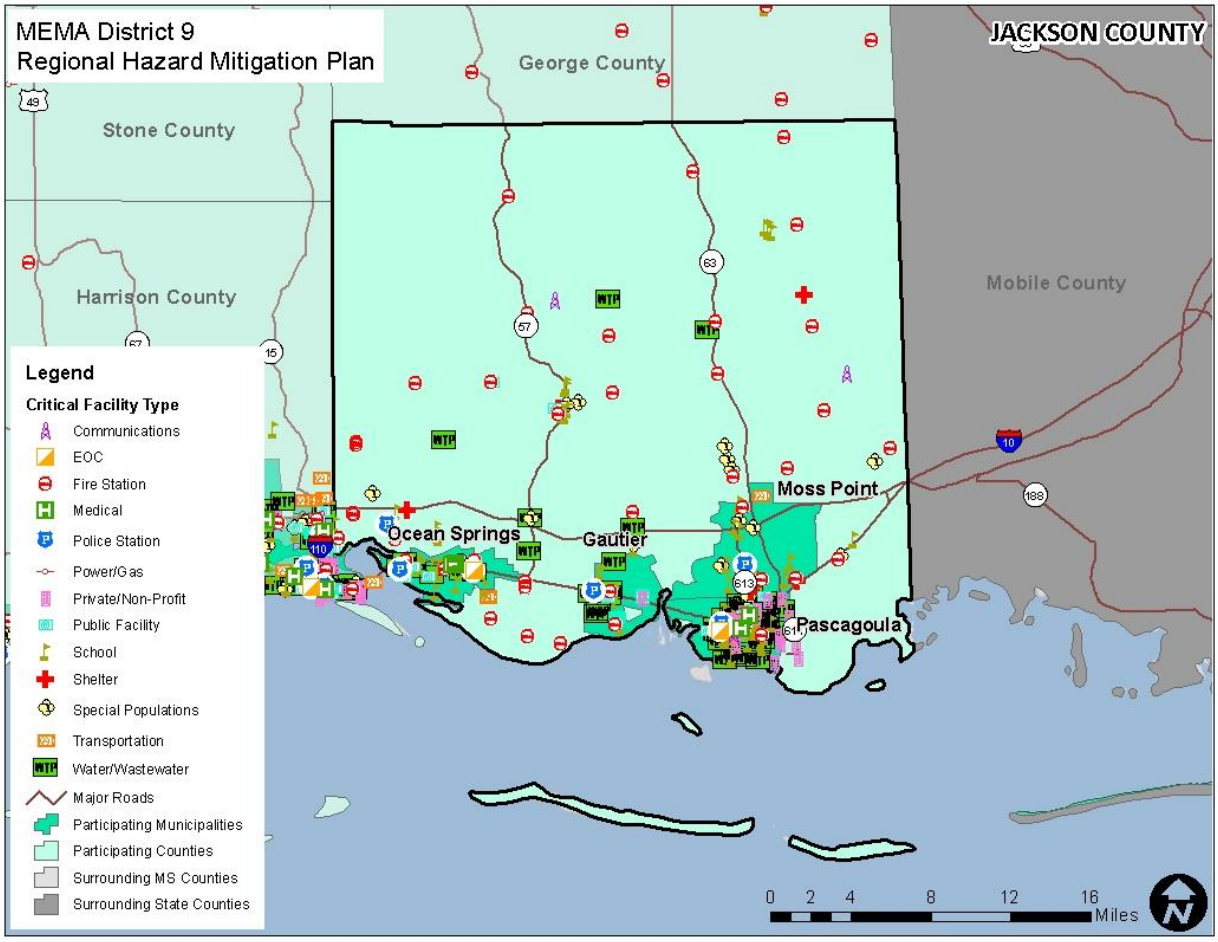
Source: Local Governments

TABLE D.36: CRITICAL FACILITY INVENTORY IN JACKSON COUNTY (CONT.)

Location	Public Facility	School	Shelter	Special Populations	Transportation	Water/ Wastewater
Gautier	1	6	0	0	0	0
Moss Point	2	13	4	7	0	1
Ocean Springs	13	13	0	5	1	8
Pascagoula	6	24	0	5	0	33
Unincorporated Area	28	19	3	10	2	14
JACKSON COUNTY TOTAL	**50**	**75**	**7**	**27**	**3**	**56**

Source: Local Governments

FIGURE D.25: CRITICAL FACILITY LOCATIONS IN JACKSON COUNTY



Source: Local Governments

D.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Jackson County that are potentially at risk to these hazards.

Table D.37 lists the population by jurisdiction according to American Community Survey 2015 population estimates. The total population in Jackson County according to Census data is 140,676 persons. Additional population estimates are presented above in Section D.1.

TABLE D.37: TOTAL POPULATION IN JACKSON COUNTY

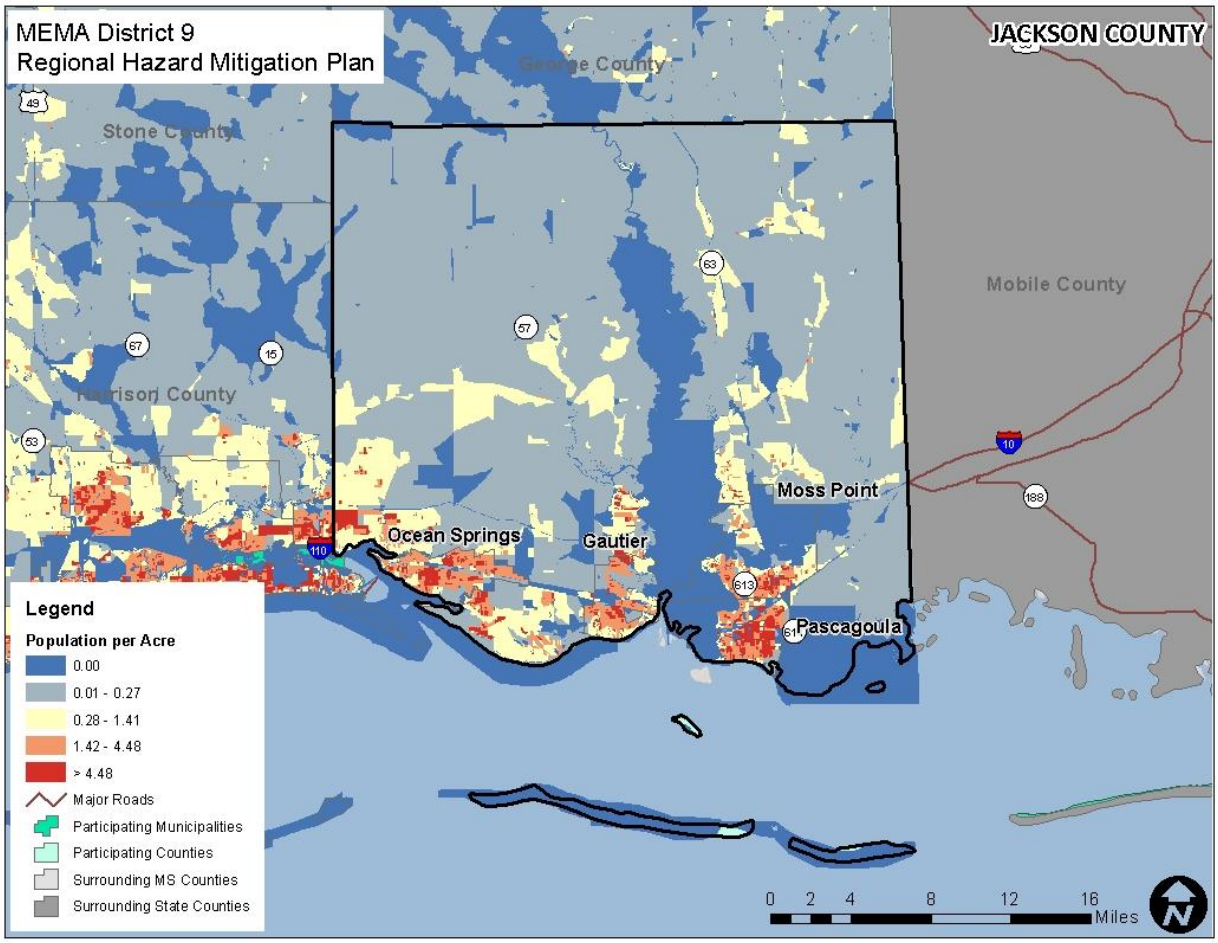
Location	Total 2015 Population
Gautier	18,563
Moss Point	13,685
Ocean Springs	17,528
Pascagoula	22,230

Location	Total 2015 Population
Unincorporated Area	68,670
JACKSON COUNTY TOTAL	**140,676**

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure D.26** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out through most of the county, with heavy concentrations in Gautier, Moss Point, Ocean Springs, and Pascagoula.

FIGURE D.26: POPULATION DENSITY IN JACKSON COUNTY



Source: United States Census Bureau, 2010 Census

D.3.3 Development Trends and Changes in Vulnerability

Since the previous local-level hazard mitigation plans were approved, Jackson County has experienced moderate growth and development. **Table D.38** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

TABLE D.38: BUILDING COUNTS FOR JACKSON COUNTY

Location	2010	2011	2012	2013	2014	2015	% Building Stock Built Post-2010
Gautier	7,507	7,748	7,886	8,034	8,113	8,180	9.0%
Moss Point	6,305	6,488	6,555	6,435	6,505	6,476	2.7%
Ocean Springs	7,246	7,482	7,628	7,892	7,880	7,625	5.2%
Pascagoula	10,803	10,935	10,696	10,813	10,574	10,891	0.8%
Unincorporated Area	26,134	26,563	27,046	27,063	27,577	27,717	6.1%
JACKSON COUNTY TOTAL	**57,995**	**59,216**	**59,811**	**60,237**	**60,649**	**60,889**	**5.0%**

Source: United States Census Bureau, American Community Survey

Table D.39 shows population growth estimates for the county from 2010 to 2015 based on the based on the American Community Survey's annual population estimates.

TABLE D.39: POPULATION GROWTH FOR JACKSON COUNTY

Location	Population Estimates						% Change 2010-2015
	2010	2011	2012	2013	2014	2015	
Gautier	18,088	18,344	18,502	18,539	18,581	18,563	2.6%
Moss Point	13,963	13,885	13,807	13,749	13,690	13,685	-2.0%
Ocean Springs	17,258	17,379	17,420	17,474	17,446	17,528	1.6%
Pascagoula	22,947	22,765	22,523	22,372	22,239	22,230	-3.1%
Unincorporated Area	64,826	66,138	67,178	67,772	68,238	68,670	5.9%
JACKSON COUNTY TOTAL	**137,082**	**138,511**	**139,430**	**139,906**	**140,194**	**140,676**	**2.6%**

Source: United States Census Bureau, American Community Survey

Based on the data above, there has been a moderate rate of residential development and population growth in the county since 2010, and the majority of incorporated jurisdictions have experienced slight increases in population and housing development, resulting in an increased number of structures and people that are vulnerable to the potential impacts of the identified hazards. However, the cities of Moss Point and Pascagoula have both experienced a decline in both population since 2010 according to estimates. Therefore, development and population growth have impacted the county's vulnerability since the previous local hazard mitigation plans were approved and there has been an increase in the overall vulnerability.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other identified areas of high risk.

D.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to

Jackson County, are presented here. All other hazards are assumed to impact the entire planning region (e.g., drought) or, due to lack of data, analysis would not lead to credible results (e.g., infectious disease). The total county exposure, and thus risk to these hazards, was presented in **Table D.35**.

The hazards to be further analyzed in this subsection include: flood, wildfire, earthquake, hurricane and tropical storm winds and storm surge, hazardous materials incident, dam and levee failure, and sea level rise.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table D.51.**

FLOOD

Historical evidence indicates that Jackson County is susceptible to flood events. A total of 25 flood events have been reported by the National Climatic Data Center resulting in around $4.1 million (2016 dollars) in property damage. On an annualized level, these damages amounted to $234,715 for Jackson County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for Jackson County. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 3.2 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

Table D.40 shows the results of the analysis.

TABLE D.40: ESTIMATED EXPOSURE OF PROPERTY TO THE FLOOD HAZARD

Location	1.0-percent ACF		0.2-percent ACF		VE Zone	
	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value
Gautier	2,316	$118,332,200	4,728	$281,124,330	84	$7,279,640
Moss Point	3,119	$130,471,550	2,572	$132,822,500	55	$5,563,840
Ocean Springs	1,226	$154,955,040	5,987	$571,123,770	94	$12,202,880
Pascagoula	12,248	$644,004,050	2,804	$243,751,930	171	$13,956,290
Unincorporated Area	10,787	$481,853,710	8,300	$536,609,990	629	$45,577,430
JACKSON COUNTY TOTAL	**29,696**	**$1,529,616,550**	**24,391**	**$1,765,432,520**	**1,033**	**$84,580,080**

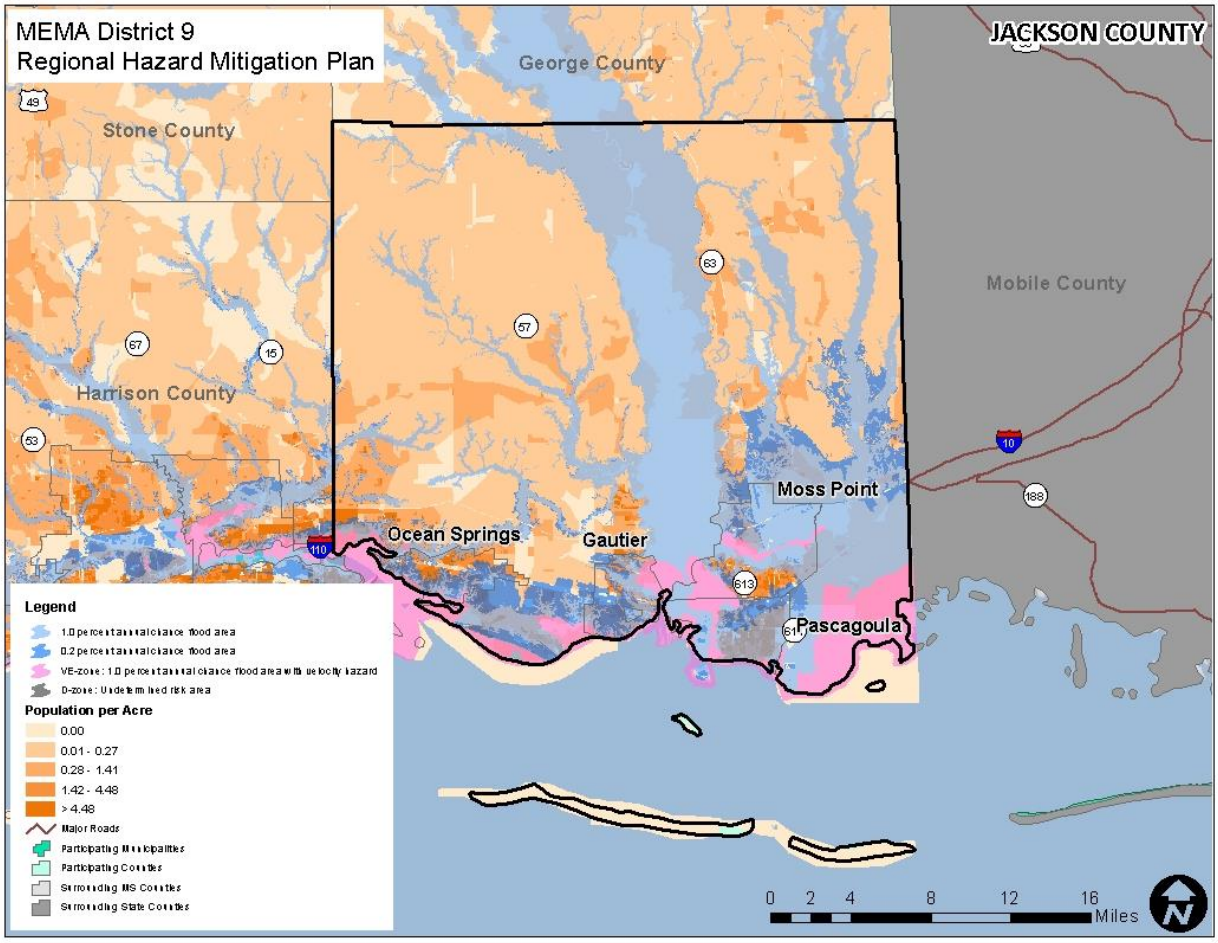
Source: Federal Emergency Management Agency DFIRM, MDEQ, Hazus MH 3.2 Data

Social Vulnerability

Figure D.27 is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in most of the population

centers in the county. Indeed, each of the incorporated municipalities is potentially at risk of being impacted by flooding in some areas of its jurisdiction. Therefore, there is significant population vulnerability to flooding.

FIGURE D.27 : POPULATION DENSITY NEAR FLOODPLAINS IN JACKSON COUNTY



Source: Federal Emergency Management Agency DFIRM, United States Census 2010

Critical Facilities

The critical facility analysis revealed that there are 195 facilities located in one of the identified floodplain zones. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) Of these facilities, 88 are located in the 1.0 percent annual chance flood zone, 103 are located in the 0.2 percent annual chance flood zone, and 4 are located in a VE-zone. A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Jackson County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

WILDFIRE

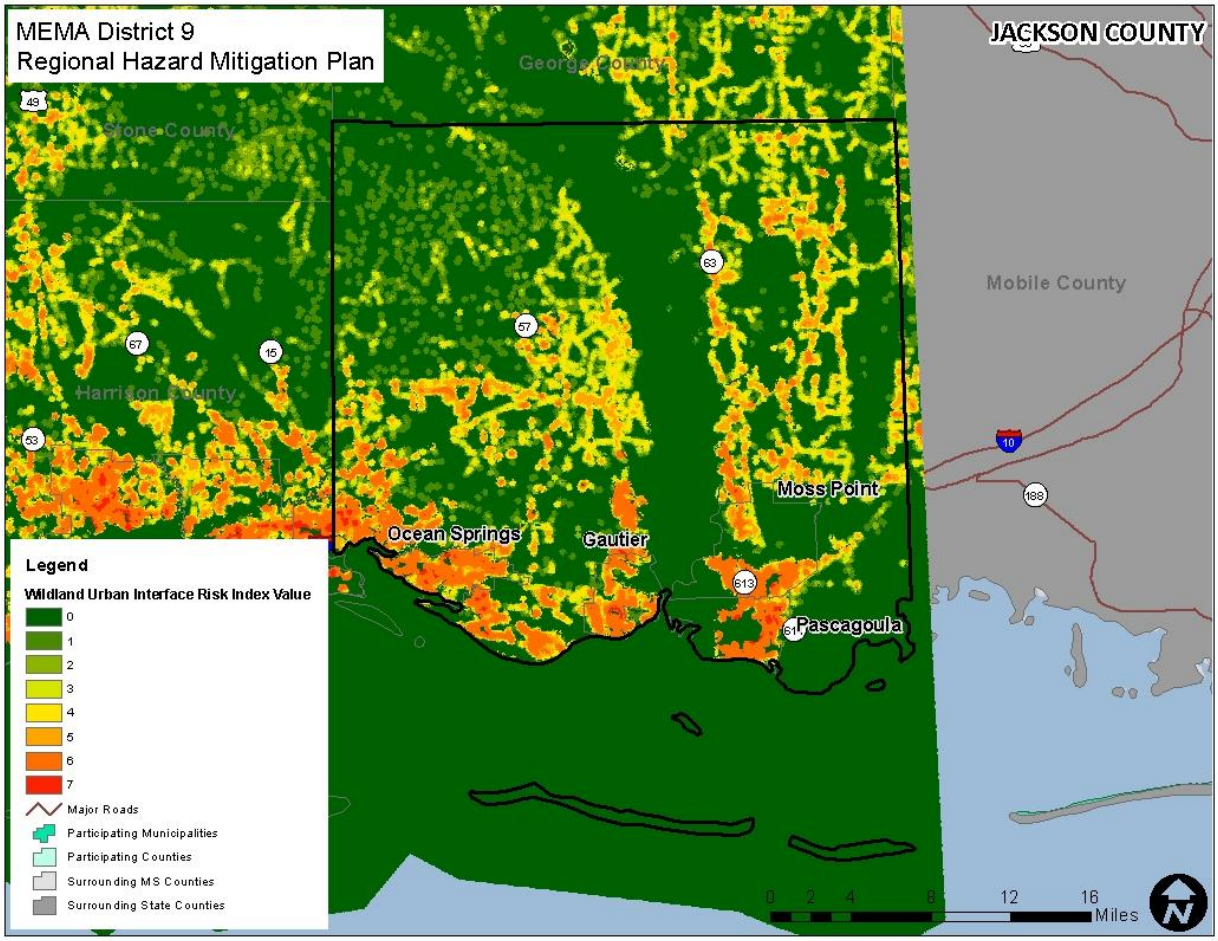
Although historical evidence indicates that Jackson County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable annualized loss figure. Annualized loss is considered relatively low, though it should be noted that a single event could result in significant damages throughout the county.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 3.2 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones. For the critical facility analysis, areas of concern were intersected with critical facility locations.

Figure D.28 shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to 7 with higher values being most severe (as noted previously, this is only a measure of relative risk). **Figure D.29** shows the areas of analysis where any grid cell is less than 3. Areas with a value below 3 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

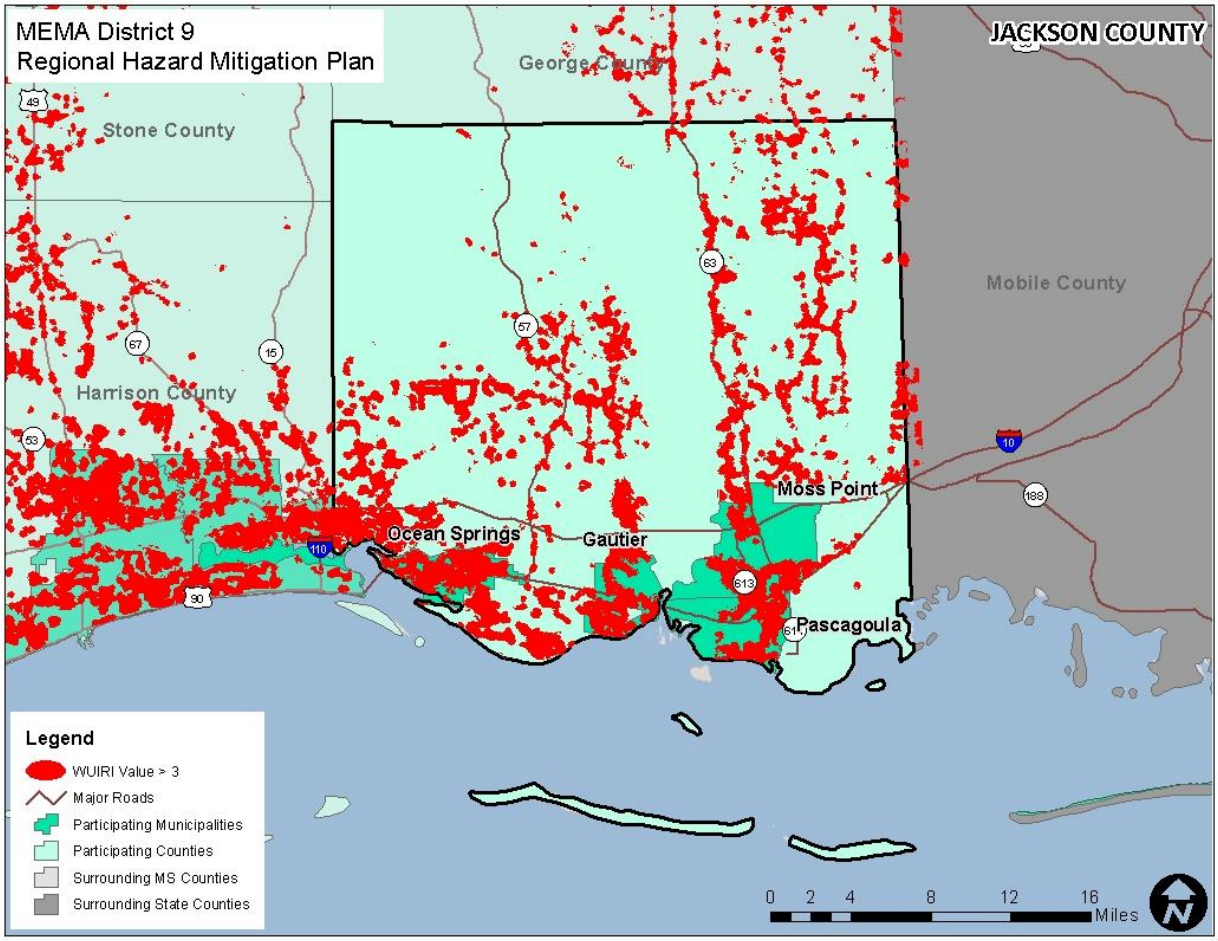
Table D.41 shows the results of the analysis.

FIGURE D.28: WUI RISK INDEX AREAS IN JACKSON COUNTY



Source: Southern Wildfire Risk Assessment Data

FIGURE D.29: WILDFIRE RISK AREAS IN JACKSON COUNTY



Source: Southern Wildfire Risk Assessment Data

TABLE D.41: EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS

Location	Wildfire Risk	
	Approx. Number of Buildings	Approx. Improved Value
Gautier	6,767	$362,594,440
Moss Point	9,227	$342,127,140
Ocean Springs	9,622	$850,642,070
Pascagoula	9,231	$541,505,990
Unincorporated Area	40,410	$1,880,656,320
JACKSON COUNTY TOTAL	**75,257**	**$3,977,525,960**

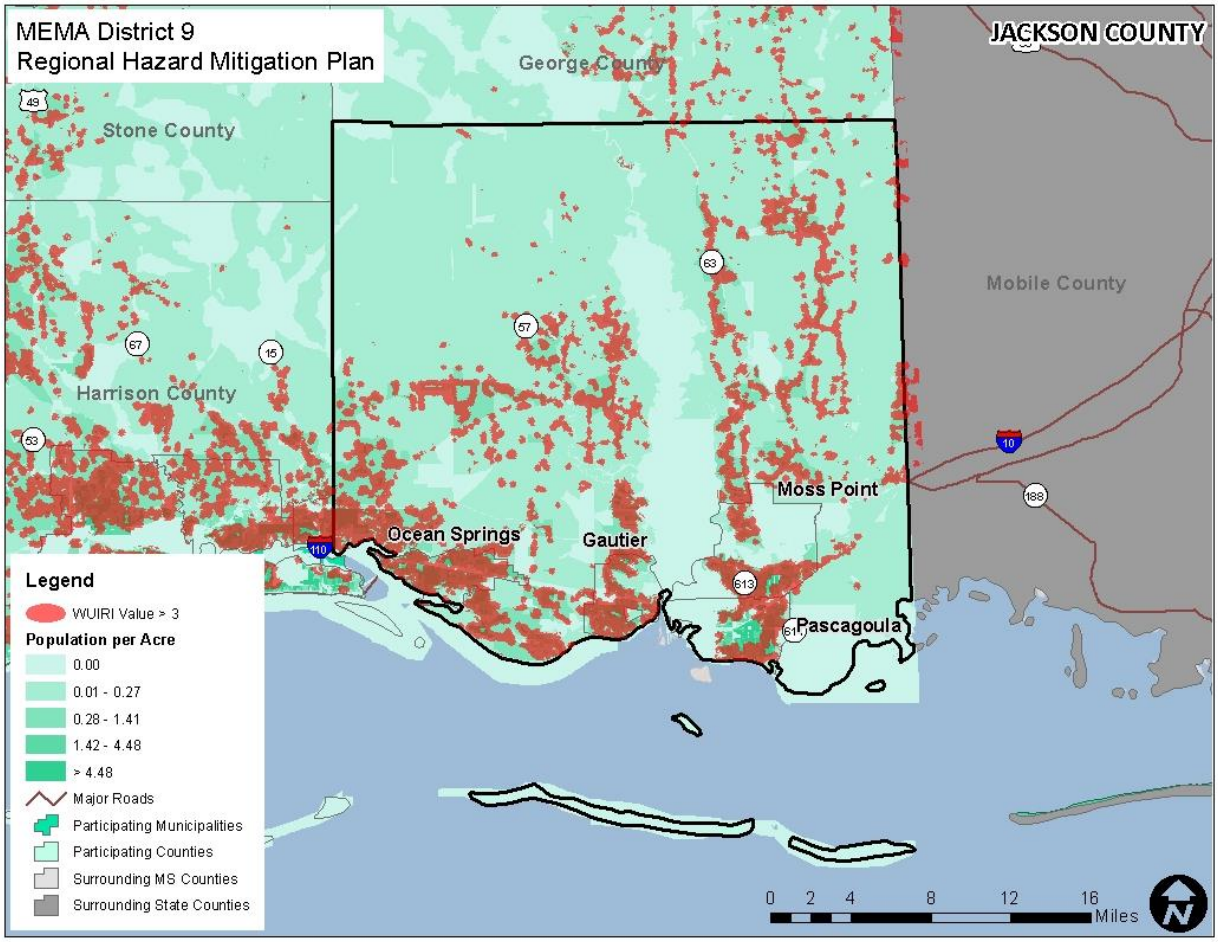
Source: SWRA, MDEQ, Hazus MH 3.2 Data

Social Vulnerability

Given some level of susceptibility across the county, it is assumed that the total population is at risk to the wildfire hazard. **Figure D.30** shows an overlay of the wildfire risk areas identified above with the

population density by census block. This shows that many of the areas of high population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

FIGURE D.30: WILDFIRE RISK AREAS IN JACKSON COUNTY



Source: Southern Wildfire Risk Assessment Data; United States Census

Critical Facilities

The critical facility analysis revealed that there are 202 critical facilities located in wildfire areas of concern, including 1 communications, 1 EOC, 39 fire stations, 1 medical, 5 police stations, 8 private/non-profits, 33 public facilities, 43 schools, 6 shelters, 23 special populations, 2 transportation, and 40 water/wastewater. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Jackson County.

EARTHQUAKE

As the Hazus-MH model suggests below, and historical occurrences confirm, any earthquake activity in the area is likely to inflict only minor to moderate damage to the county. Hazus-MH 3.2 estimates a total annualized loss of $49,000 which includes buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss[26] for the county. The results of the analysis are generated at the Census Tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table D.42** summarizes the findings with results rounded to the nearest thousand.

TABLE D.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD

Location	Structural Damage	Non-Structural Damage	Contents Damage	Inventory Loss	Total Annualized Loss
Jackson County	$12,000	$29,000	$8,000	$0	$49,000

Source: Hazus-MH 3.2

Social Vulnerability
It can be assumed that all existing and future populations are at risk to the earthquake hazard.

Critical Facilities
The Hazus-MH probabilistic analysis indicated that no critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor damage, should an event occur. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Jackson County. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Jackson County may not experience a large earthquake, localized damage is possible with an occurrence. A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

HURRICANE AND TROPICAL STORM

Historical evidence indicates that Jackson County has very significant risk to the hurricane and tropical storm hazard. There have been 12 disaster declarations due to hurricanes or tropical storms (Hurricanes Betsy, Camille, Frederic, Elena, Georges, Ivan, Dennis, Katrina, Gustav, and Isaac, as well as Tropical Storms Allison and Isidore). A large number tracks have come near or traversed through the county, as shown and discussed in Section D.2.10. Hazus-MH 3.2 estimates a total annualized loss of $102,555,000 which includes buildings, contents, and inventory throughout the county.

[26] Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

Hurricane Winds

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and storm surge and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only these two aspects of hurricane losses are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to hurricane and tropical storm wind hazard. Hazus-MH 3.2 was used to determine average annualized losses[27] for the county as shown below in **Table D.43.** Only losses to buildings, inventory, and contents are included in the results.

TABLE D.43: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD

Location	Building Damage	Contents Damage	Inventory Loss	Total Annualized Loss
Jackson County	$70,481,000	$31,767,000	$307,000	$102,555,000

Source: Hazus-MH 3.2

Storm Surge

In addition, although it was treated as a separate hazard throughout this plan, storm surge is most often associated with hurricanes and tropical storms. Indeed, Hazus incorporates the storm surge model for estimating damage from storm surge as part of the hurricane model. The storm surge model can only be run as part of a historic hurricane model run and not as part of an annualized loss model. Unfortunately, in this model, storm surge impacts are calculated as part of the total damage from the historic event and thus could not be separated out and evaluated solely in terms of storm surge loss. As such, the estimated losses presented below are combined losses from hurricane winds and storm surge. The historic Hurricane Katrina model was utilized as this was certainly one of the most impactful storms in the region and therefore estimates the potential losses that are possible from a large hurricane event. **Table D.44** presents the losses from this modeled event.

TABLE D.44: POTENTIAL LOSS ESTIMATIONS FOR LARGE HURRICANE EVENT

Location	Building Damage	Contents Damage	Inventory Loss	Total Annualized Loss
Jackson County	$381,792,000	$142,547,000	$605,000	$524,944,000

Source: Hazus-MH 3.2

Social Vulnerability

Given equal susceptibility across the county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm wind hazard. In terms of social vulnerability to storm surge, coastal populations are at much higher risk than inland populations. Since large concentrations of population are located along the coast of Jackson County, there is significant social vulnerability to storm surge in the county.

Critical Facilities

Given equal vulnerability across Jackson County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among factors. Determining individual building response to wind and storm surge is beyond the scope of this

[27] Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table D.52** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Jackson County.

HAZARDOUS MATERIALS INCIDENT

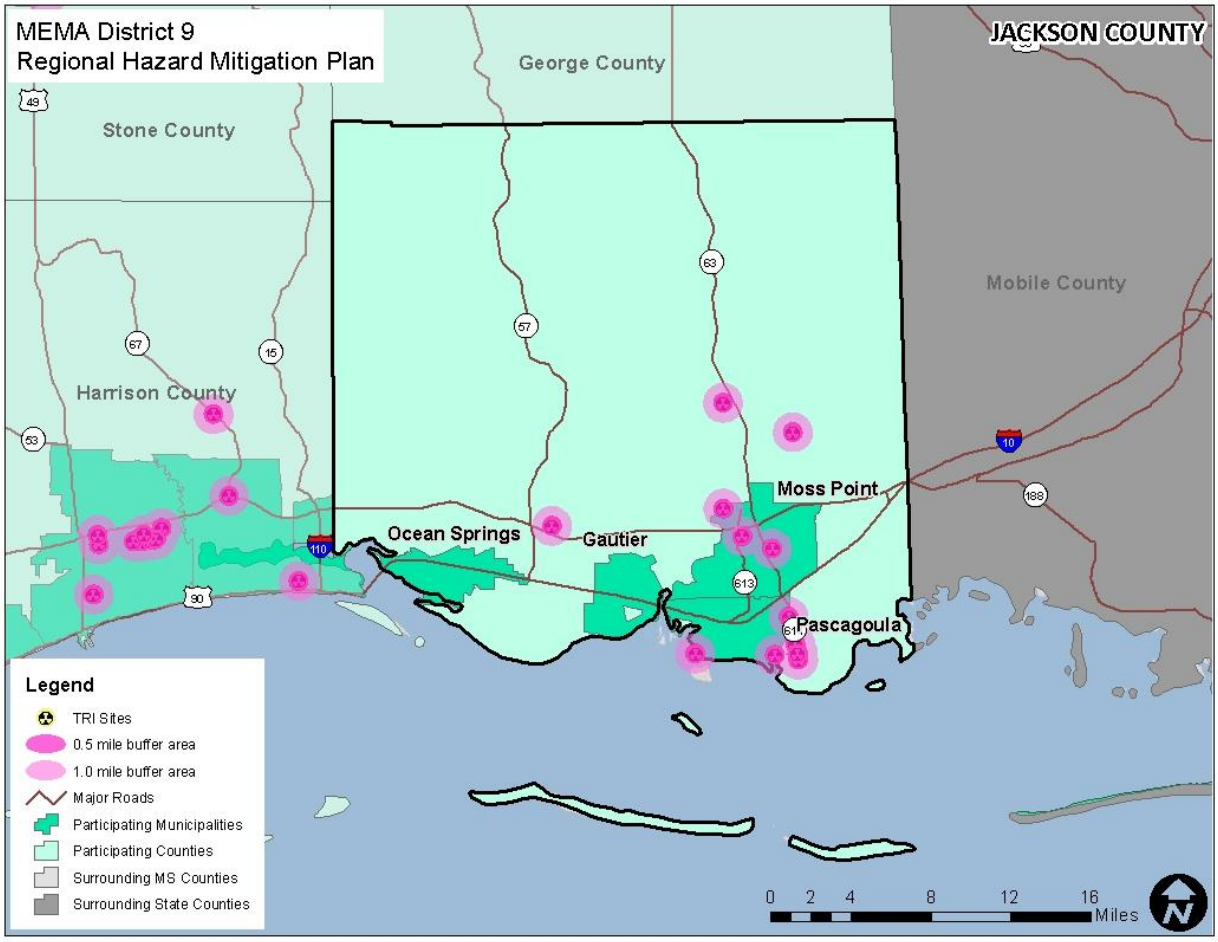
Historical evidence indicates that Jackson County is susceptible to hazardous materials events. A total of 176 HAZMAT incidents have been reported by the Pipeline and Hazardous Materials Safety Administration, resulting in $1.0 million (2016 dollars) in property damage as well as 15 injuries. On an annualized level, these damages amount to $25,777 for the county.

Most hazardous materials incidents that occur are contained and suppressed before destroying any property or threatening lives. However, they can have a significant negative impact. Such events can cause multiple deaths, completely shut down facilities, and cause affected properties to be destroyed or suffer major damage. In a hazardous materials incident, solid, liquid, and/or gaseous contaminants may be released from fixed or mobile containers. Weather conditions will directly affect how the hazard develops. Certain chemicals may travel through the air or water, affecting a much larger area than the point of the incidence itself. Non-compliance with fire and building codes, as well as failure to maintain existing fire and containment features, can substantially increase the damage from a hazardous materials release. The duration of a hazardous materials incident can range from hours to days. Warning time is minimal to none.

In order to conduct the vulnerability assessment for this hazard, GIS intersection analysis was used for fixed and mobile areas and building footprints/parcels where available and Census block data where footprints/parcels were not available.[28] In both scenarios, two sizes of buffers—0.5-mile and 1.0-mile—were used. These areas are assumed to represent the different levels of effect: immediate (primary) and secondary. Primary and secondary impact zones were selected based on guidance from the PHMSA Emergency Response Guidebook. For the fixed site analysis, geo-referenced TRI sites in the region, along with buffers, were used for analysis as shown in **Figure D.31.** For the mobile analysis, the major roads (Interstate highway, U.S. highway, and State highway) and railroads, where hazardous materials are primarily transported that could adversely impact people and buildings, were used for the GIS buffer analysis. **Figure D.32** shows the areas used for mobile road toxic release buffer analysis and **Figure D.33** shows the areas used for the mobile railroad toxic release buffer analysis. The results indicate the approximate number of improved properties and improved value, as shown in **Table D.45** (fixed sites), **Table D.46** (mobile roads), and **Table D.47** (mobile railroad sites).[29]

[28] This type of analysis will likely yield inflated results (generally higher than what is actually reported after an actual event).
[29] Note that improved properties included in the 1.0-mile analysis are also included in the 0.5-mile analysis.

FIGURE D.31 : TRI SITES WITH BUFFERS IN JACKSON COUNTY



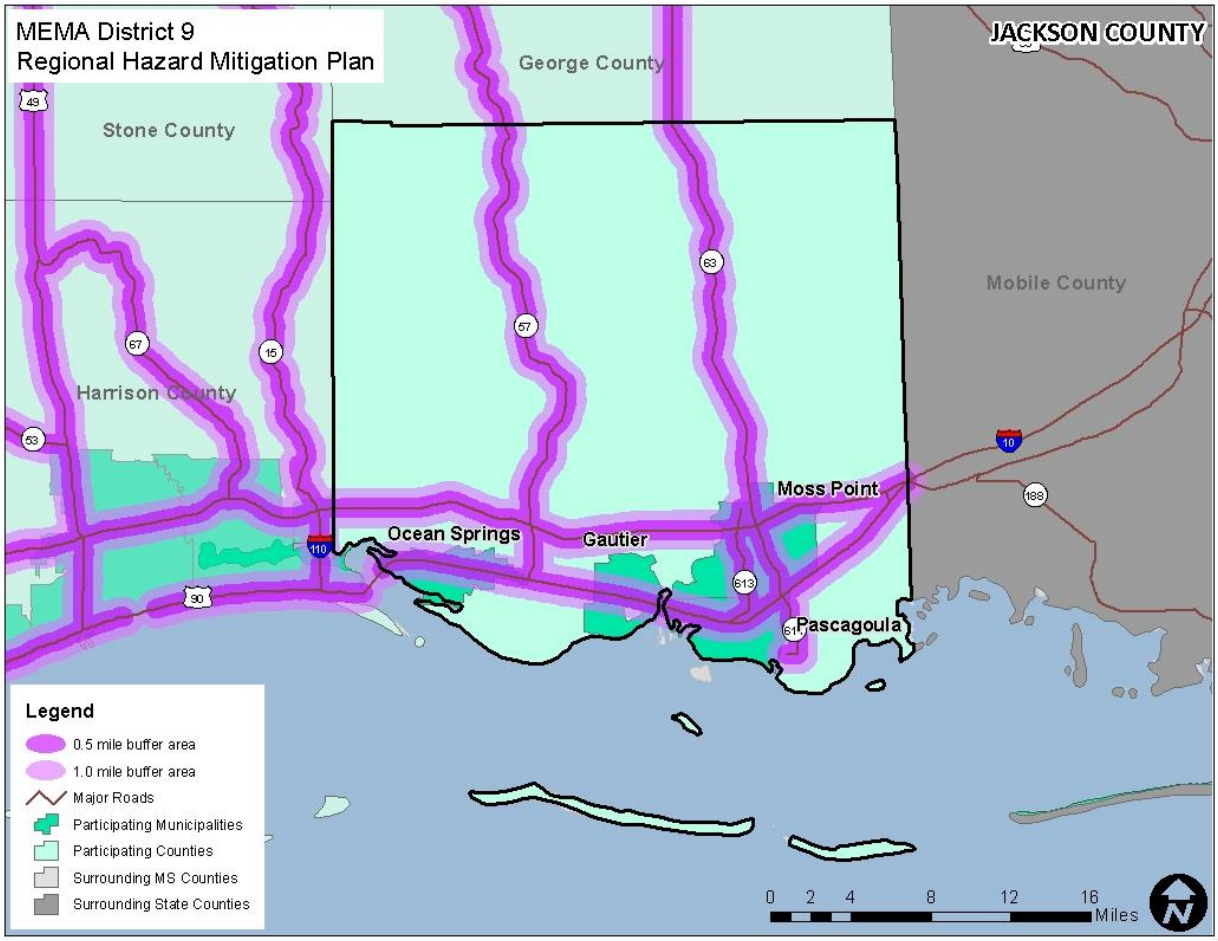
Source: Environmental Protection Agency

TABLE D.45: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS MATERIALS (FIXED SITES)

Location	0.5-mile buffer zone		1.0-mile buffer zone	
	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value
Gautier	0	$0	0	$0
Moss Point	583	$19,614,990	1,818	$74,425,480
Ocean Springs	0	$0	0	$0
Pascagoula	1,003	$39,815,600	3,902	$180,770,120
Unincorporated Area	968	$29,897,250	2,531	$67,036,780
JACKSON COUNTY TOTAL	**2,554**	**$89,327,840**	**8,251**	**$322,232,380**

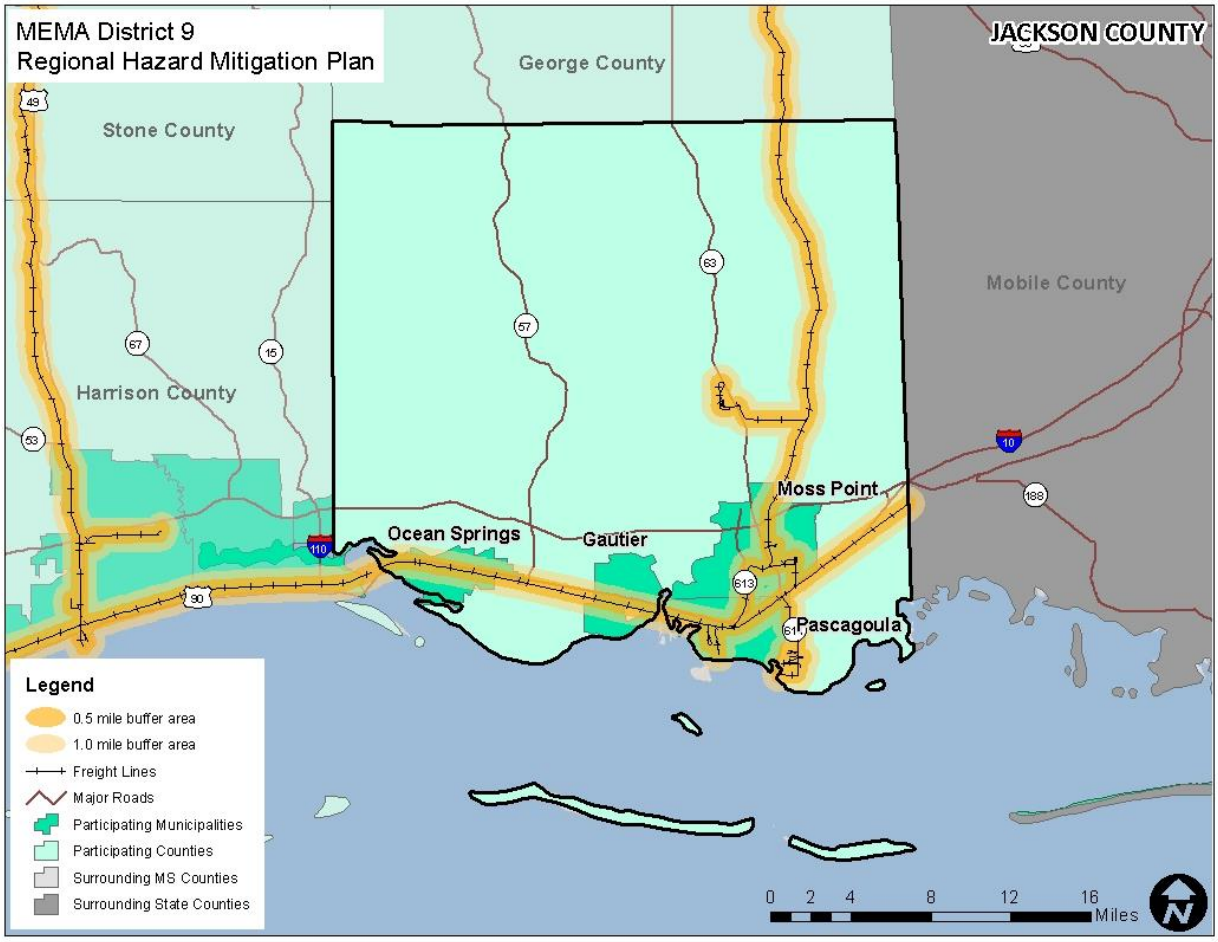
Source: EPA, MDEQ, Hazus MH 3.2 Data

FIGURE D.32 : MOBILE (ROAD) HAZMAT BUFFERS IN JACKSON COUNTY



Source: Federal Highway Administration National Highway Planning Network

FIGURE D.33 : MOBILE (RAIL) HAZMAT BUFFERS IN JACKSON COUNTY



Source: U.S. Department of Transportation Federal Railroad Administration

TABLE D.46: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS MATERIALS SPILL (MOBILE ANALYSIS - ROAD)

Location	0.5-mile buffer zone		1.0-mile buffer zone	
	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value
Gautier	2,038	$128,322,620	3,973	$231,157,040
Moss Point	6,704	$250,007,730	10,082	$360,729,220
Ocean Springs	6,109	$560,929,950	9,412	$825,611,110
Pascagoula	4,913	$365,649,400	9,604	$599,308,610
Unincorporated Area	10,707	$405,885,670	20,582	$842,454,330
JACKSON COUNTY TOTAL	**30,471**	**$1,710,795,370**	**53,653**	**$2,859,260,310**

Source: NHPN, MDEQ, Hazus MH 3.2 Data

TABLE D.47: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS MATERIALS SPILL (MOBILE ANALYSIS - RAILROAD)

Location	0.5-mile buffer zone		1.0-mile buffer zone	
	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value
Gautier	2,105	$96,599,920	4,241	$229,056,300
Moss Point	4,380	$143,660,210	8,047	$285,876,040
Ocean Springs	5,349	$502,955,290	9,255	$811,896,650
Pascagoula	5,903	$415,698,900	11,166	$649,874,460
Unincorporated Area	5,225	$159,075,020	8,949	$302,491,080
JACKSON COUNTY TOTAL	**22,962**	**$1,317,989,340**	**41,658**	**$2,279,194,530**

Source: USDOT FRA, MDEQ, Hazus MH 3.2 Data

Social Vulnerability

Given high susceptibility across the entire county, it is assumed that the total population is at risk to a hazardous materials incident. It should be noted that areas of population concentration may be at an elevated risk due to a greater burden to evacuate population quickly.

Critical Facilities

Fixed Site Analysis:

The critical facility analysis for fixed TRI sites revealed that there are 21 facilities located in a fixed HAZMAT risk zone. Of these, 6 facilities are in the primary (0.5 mile) risk area including 4 private/non-profit, 1 school, and 1 water/wastewater. A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

Mobile Analysis:

The critical facility analysis for transportation corridors revealed that there are 237 facilities located in the primary and secondary road HAZMAT buffer areas. Of these, there were 173 critical facilities located in the primary risk zone including 2 communications, 3 EOCs, 20 fire stations, 4 medical, 7 police stations, 1 power/gas, 16 private/non-profit, 33 public facilities, 36 schools, 6 shelters, 16 special populations, and 29 water/wastewater.

For the rail line buffer areas, there were a total of 209 critical facilities located in primary and secondary buffer areas. Of these, 148 facilities are located within the primary buffer area including 4 communications, 3 EOCs, 14 fire stations, 4 medical, 6 police stations, 1 power/gas, 17 private/non-profit, 22 public facilities, 33 schools, 4 shelters, 11 special populations, and 29 water/wastewater.

A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

In conclusion, a hazardous material incident has the potential to impact many existing and future buildings, critical facilities, and populations in Jackson County. Those areas in a primary buffer are at the highest risk, though all areas carry some vulnerability due to variations in condition that could alter the impact area (i.e., direction and speed of wind, volume of release, etc.).

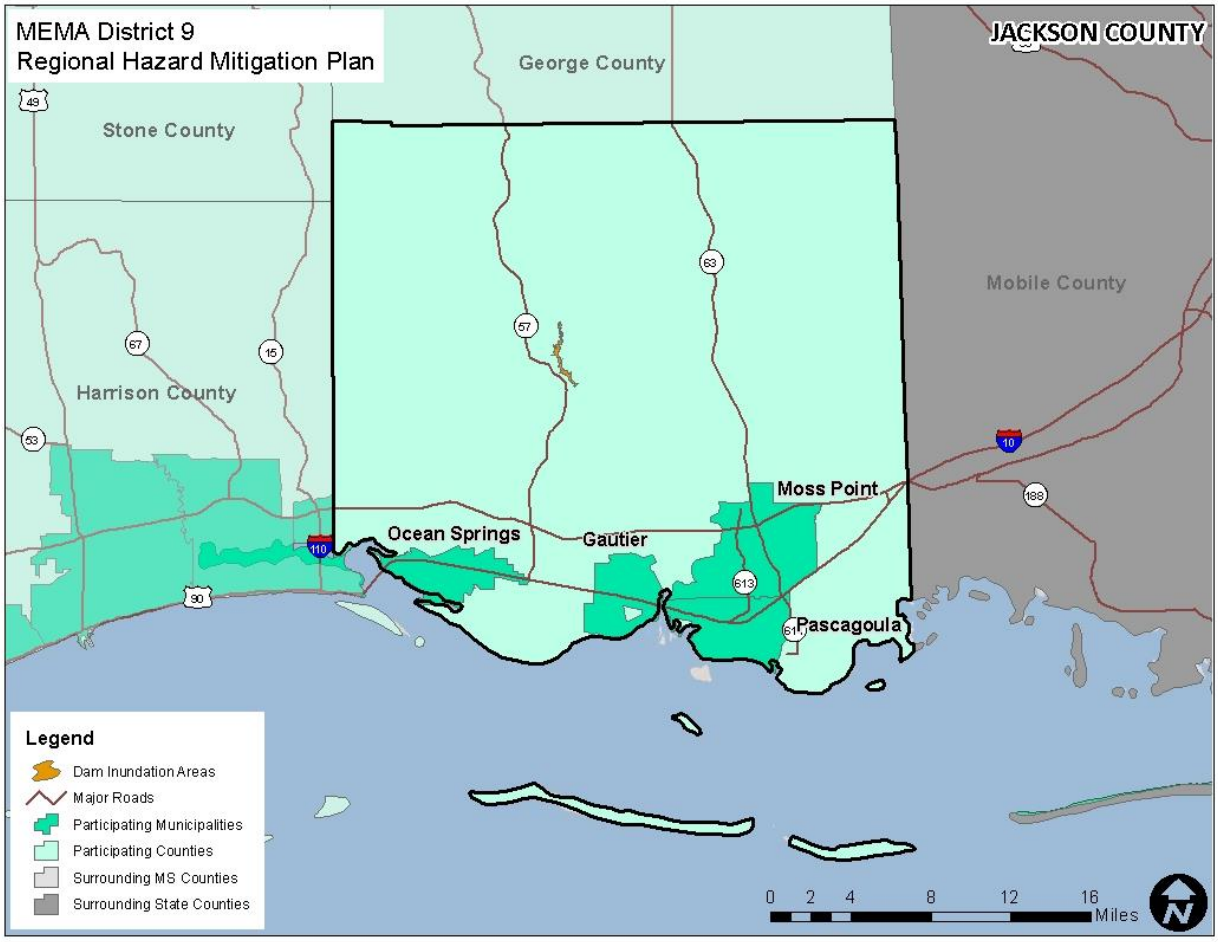
DAM/LEVEE FAILURE

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure D.34**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 3.2 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

Table D.48 presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented

FIGURE D.34: DAM INUNDATION AREAS IN JACKSON COUNTY



Source: Mississippi Department of Environmental Quality

TABLE D.48: ESTIMATED EXPOSURE OF IMPROVEMENTS TO THE DAM/LEVEE FAILURE HAZARD

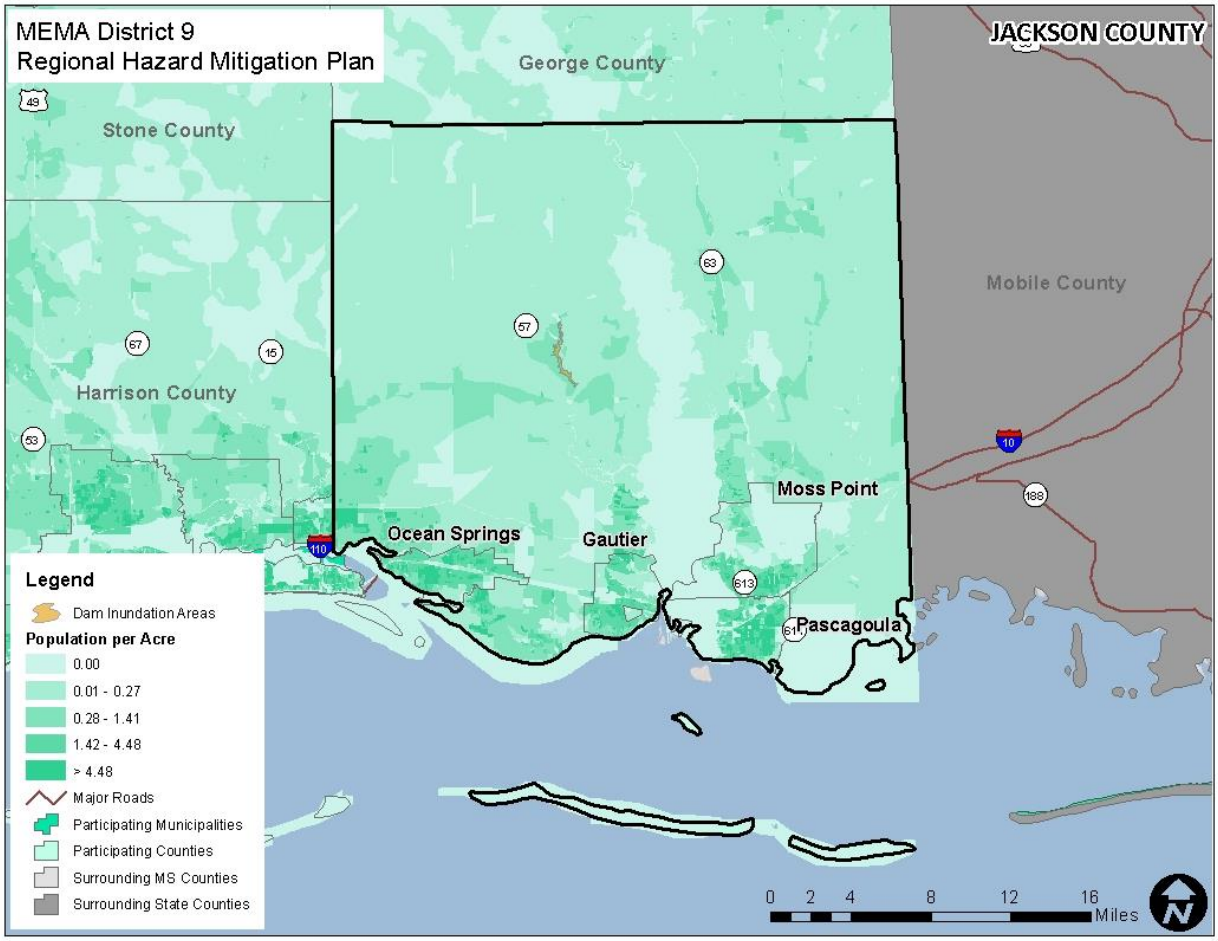
Location	Dam Inundation Area	
	Approx. Number of Buildings	Approx. Improved Value
Gautier	0	$0
Moss Point	0	$0
Ocean Springs	0	$0
Pascagoula	0	$0
Unincorporated Area	1	$0
JACKSON COUNTY TOTAL†	**1**	**$0**

†This does not include areas that would be inundated by the Big Creek Lake Dam, located in Alabama as geospatial data for the inundation area was not available.
Source: MDEQ, Hazus 3.2

Social Vulnerability

Figure D.35 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There is an area of concern in the central part of the county, although it should be noted that most of the population of the county is not at risk to a dam/levee failure.

FIGURE D.35: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN JACKSON COUNTY



Source: MDEQ, United States Census 2010

Critical Facilities

The critical facility analysis revealed that there are no facilities located in dam inundation areas. A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

In conclusion, a dam has the potential to impact a number of existing and future buildings, facilities, and populations in Jackson County, though this analysis is not all-encompassing in terms of risk to a dam or levee failure because inundation mapping is not available for all dams in the region.

CLIMATE CHANGE/SEA LEVEL RISE

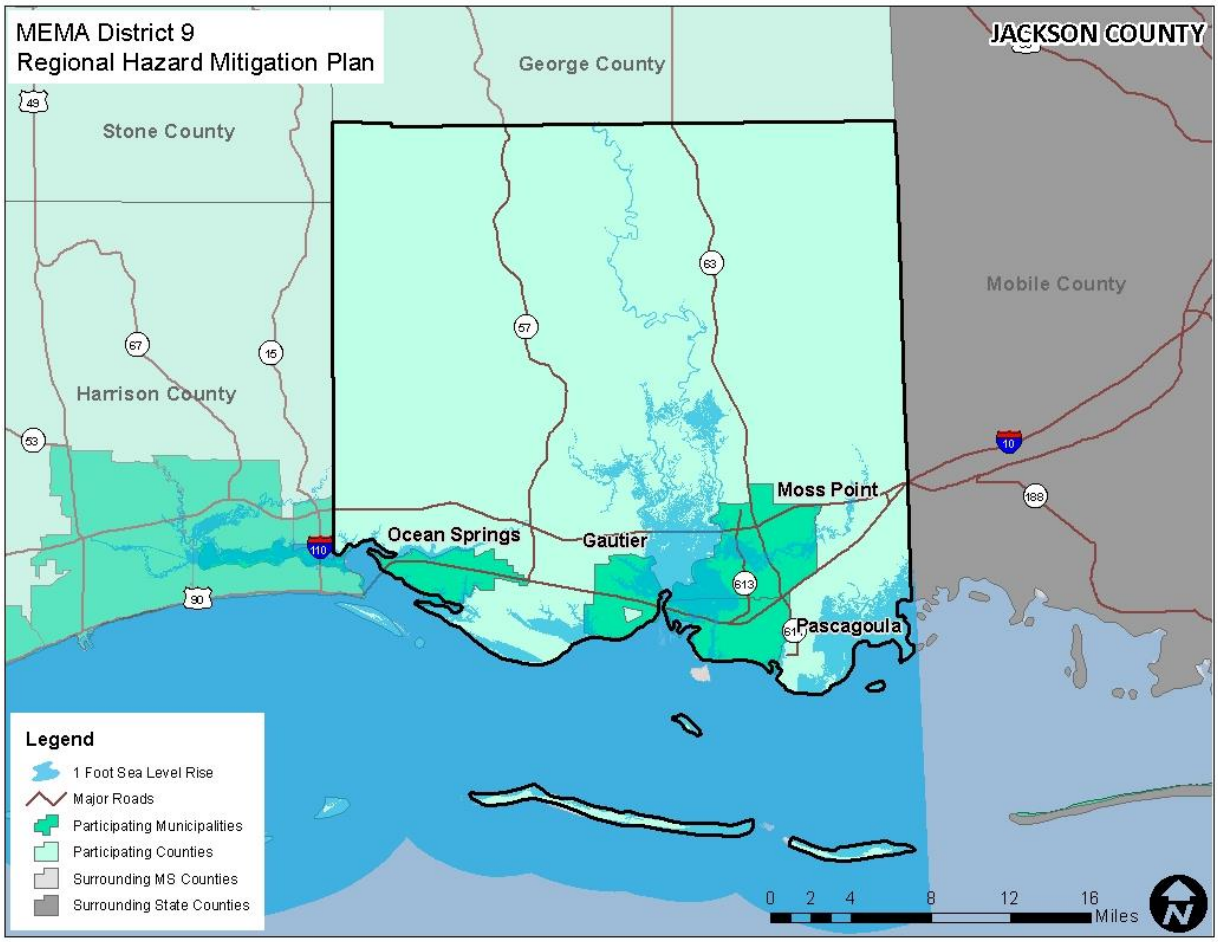
Most assessments carried out across the globe have concluded that climate change is a phenomenon that will impact our planet in the foreseeable future. Among others, the National Climate Assessment,

International Panel on Climate Change, and National Oceanic and Atmospheric Administration all project that climate change will impact the United States and will have a major impact on coastal communities due to the effects of sea level rise. As such, projections concerning sea level rise are important to incorporate into planning efforts in order to identify people and property that may be impacted.

In order to assess sea level rise risk, a GIS-based analysis was used to estimate exposure to future projections of sea level rise using data produced by the National Oceanic and Atmospheric Administration in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within the inundation zone that would be created in the event of 1 foot, 3 feet, and 6 feet of sea level rise. A number of different sea level rise scenarios were available via NOAA (from 1 foot to 6 feet, at 1 foot intervals), however these scenarios were selected to demonstrate a range of potential sea level rise scenarios from low to moderate to high projections. These scenarios can be found in **Figure D.36**, **Figure D.37**, and **Figure D.38**.

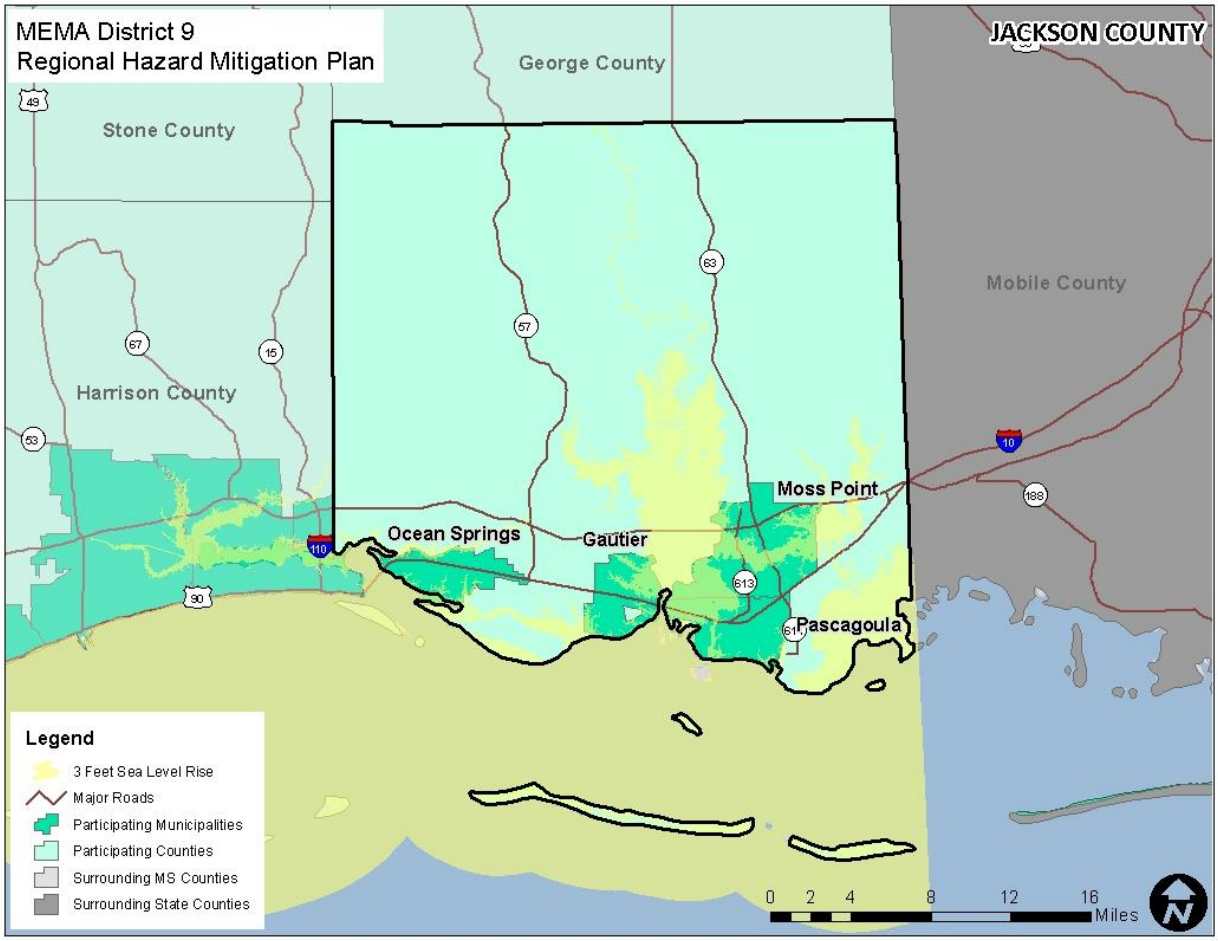
Table D.49 presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

FIGURE D.36: 1 FOOT SEA LEVEL RISE SCENARIO IN JACKSON COUNTY



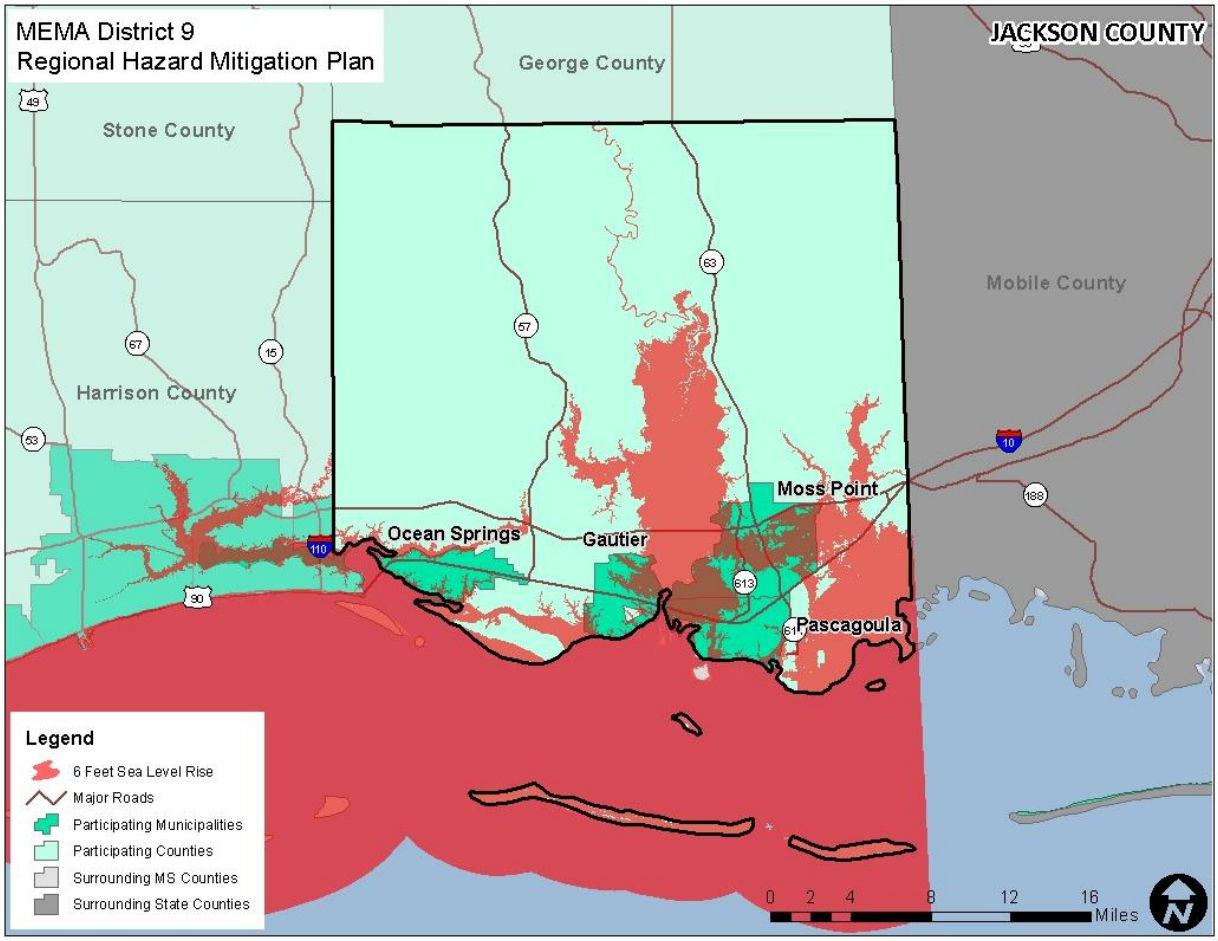
Source: NOAA

FIGURE D.37: 3 FEET SEA LEVEL RISE SCENARIO IN JACKSON COUNTY



Source: NOAA

FIGURE D.38: 6 FEET SEA LEVEL RISE SCENARIO IN JACKSON COUNTY



Source: NOAA

TABLE D.49: ESTIMATED EXPOSURE OF PARCELS TO THE SEA LEVEL RISE HAZARD

Location	1.0 foot		3.0 feet		6.0 feet	
	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value	Approx. Number of Buildings	Approx. Improved Value
Gautier	110	$8,651,090	371	$29,086,520	773	$49,712,830
Moss Point	71	$5,883,400	244	$17,686,870	1,550	$56,765,010
Ocean Springs	49	$12,727,870	118	$24,058,690	278	$47,884,160
Pascagoula	65	$6,319,600	245	$28,427,260	1,102	$73,423,870
Unincorporated Area	809	$54,924,890	2,046	$145,204,630	6,728	$324,849,720
JACKSON COUNTY TOTAL	**919**	**$63,575,980**	**2,417**	**$174,291,150**	**7,501**	**$374,562,550**

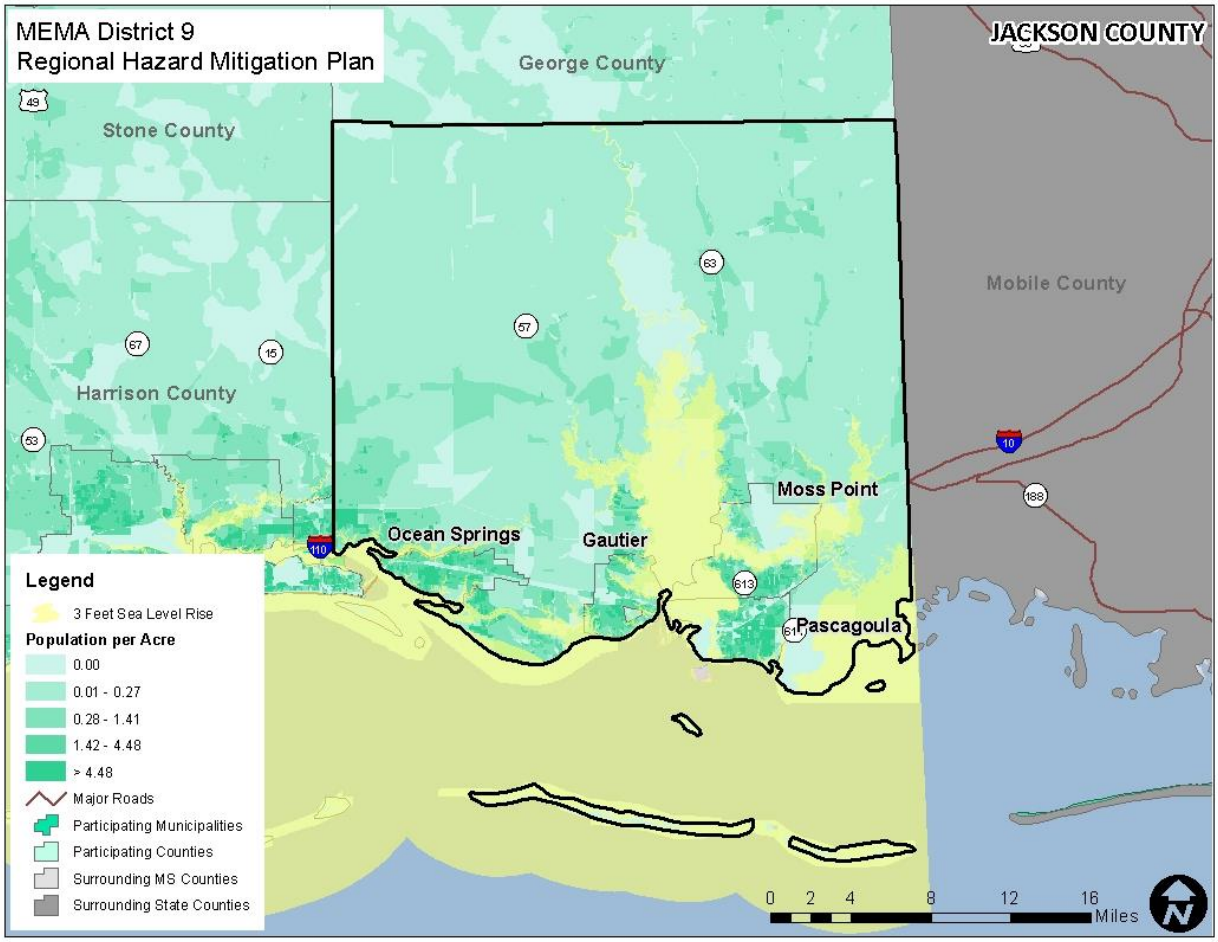
Source: NOAA, MDEQ, Hazus MH 3.2 Data

Social Vulnerability

Figure D.39 is presented to gain a better understanding of at-risk population by evaluating census block level population data against the 3 feet sea level rise scenario. The three feet scenario was selected since

this is a moderate level projection. Based on this analysis, a significant part of the coastal population in the county is vulnerable to sea level rise.

FIGURE D.39: POPULATION DENSITY WITH 3 FEET SEA LEVEL RISE IN JACKSON COUNTY



Source: NOAA, United States Census 2010

Critical Facilities

The critical facility analysis revealed that there are 3 facilities located in the 3 feet of sea level rise scenario inundation area. As mentioned above, this scenario was selected as it is a mid-range projection for sea level rise based on a number of studies. The 5 facilities include 2 public facilities and 3 water/wastewater. A list of specific critical facilities and their associated risk can be found in **Table D.52** at the end of this subsection.

CONCLUSIONS ON HAZARD VULNERABILITY

Table D.50 presents an overall summary of the community's vulnerability for each jurisdiction. This summary provides key problem statements and identifies the community's greatest vulnerabilities that will be addressed in the mitigation strategy.

TABLE D.50: SUMMARY OF VULNERABILITY FOR JACKSON COUNTY

	Key Problem Statements
Jackson County	Jackson County, Gautier, Moss Point, Ocean Springs, and Pascagoula have many low-lying neighborhoods and streets that are especially vulnerable to coastal flooding and storm surge. Vulnerable and at-risk populations including low-income, minority, elderly, or disabled persons disproportionately live in flood prone areas. Additionally, many employers like casinos, resorts, and hotels are located in these vulnerable locations. Disruption or loss of these employers and facilities can result in significant unemployment, economic loss, and migration from the county and cities.

Table D.51 presents a summary of annualized loss for each hazard in Jackson County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

It should also be noted that many of these estimates are based on incomplete data and likely underestimate the historic dollar damage sustained in each county. Especially for hazards such as extreme cold, extreme heat, hail, lightning, and winter weather, it is very likely that more damage occurred historically than has been identified.

TABLE D.51: ANNUALIZED LOSS FOR JACKSON COUNTY

Hazard	Jackson County
Flood-related Hazards	
Dam and Levee Failure	*Not Available*
Erosion	*Not Available*
Flood	$234,715
Storm Surge	$213,721,103
Fire-related Hazards	
Drought	*Not Available*
Lightning	$17,009
Wildfire	*Not Available*
Geologic Hazards	
Earthquake†	$12,000
Wind-related Hazards	
Extreme Cold	$7,675
Extreme Heat/Heat Wave	*Not Available*
Hailstorm	$17
Hurricane and Tropical Storm	$101,235,648

Hazard	Jackson County
Severe Thunderstorm/High Wind	$20,249
Tornado	$150,650
Winter Weather	*Not Available*
Climate Change/Sea Level Rise	*Not Available*
Hazardous Materials Incident/Train Derailment	$25,777
Infectious Disease	*Not Available*

†Historic dollar damage was not available for this hazard, but since estimated annualized losses from Hazus were available, those numbers were used in this table.
*In this table, the term "Not Available" is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to impacts from atmospheric hazards such as drought and hailstorm. Some buildings may be more vulnerable to some of these hazards based on locations, construction, and building type. In addition, all populations are vulnerable to hazards like infectious disease which could presumably impact any segment of the population without regard to geographic location. **Table D.52** shows the critical facilities vulnerable to additional hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an "**X**").

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TABLE D.52: AT-RISK CRITICAL FACILITIES IN JACKSON COUNTY

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
JACKSON COUNTY																										
EOC Radio Communication Tower		Comm		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Fontainebleau Radio Communication Tower		Comm		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Lily Orchard Radio Communication Tower		Comm		X		X		X	X		X	X	X	X	X	X	X	X								X
Vancleave Radio Communication Tower		Comm		X				X	X		X	X	X	X	X	X	X	X						X		X
County EOC		EOC		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Central Jackson County Fire Dept - Fontainebleau		Fire Station		X				X	X		X	X	X	X	X	X	X	X				X	X		X	X
Central Jackson County Fire Dept - Vancleave		Fire Station		X				X	X		X	X	X	X	X	X	X	X				X	X			X
East Central Nutbank Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X						X	X	X
East Central Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X						X	X	X
East Central Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X							X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Escatawpa Central Fire Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X					X	X		X
Fontainebleau Main Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Fontainebleau Sub Sta.		Fire Station		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Fort Bayou Volunteer Fire Dept - Station 1		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X
Fort Bayou Volunteer Fire Dept - Station 2		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Fort Bayou Volunteer Fire Dept - Station 3		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X
Fort Ramsay Fire Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X
Forts Lake Main Sta.		Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X								X
Forts Lake Orange Grove Sub Sta.		Fire Station		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Gulf Park Est. Fire Sta.		Fire Station		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Helena Fire Sat.		Fire Station		X	X			X	X	X	X	X	X	X	X	X	X	X						X	X	X
Latimer Main Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X
Latimer Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
North East Jackson County Fire Dept - East Central Station		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X						X	X	X
North East Jackson County Fire Dept - Three Rivers Station		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
North Fire Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X					X			X
South Fire Sta.		Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X								X
St. Andrews Fire Sta.		Fire Station		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Three Rivers North Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Three Rivers Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Vancleave May Lane Sta.		Fire Station		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Vancleave Mt Pleasant Sub Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X
Vancleave River Rd Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X								X
Vancleave Waltman Rd. Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
West Jackson Co. Big Ridge Rd Sta.		Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
West Jackson Co. Sub		Fire Station		X			X	X	X	X	X	X	X	X	X	X	X	X					X			X

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FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Jackson County Sheriff Dept Substation - St. Martin		Police Station		X		X		X	X	X	X	X	X	X	X	X	X	X					X			X
Old School House		Private/Non-Profit		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Aluminum Bleachers		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Baseball Concesion		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Batting Cage		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Boat Ramp - Wood		Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X	X			X	X		X	X
City Hall Annex S		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
City Park Pavillion D		Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
City Park Pavillion E		Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
City Park Restroom		Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
City Park Storage		Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
County Health Department		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Football Concession		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Football Pressbox - N		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Football Pressbox - S		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X

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Jackson County Complex		Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Complex - Jefferson Street		Public Facility		X				X	X	X	X	X	X	X	X	X	X	X					X		X	X
Jackson County Fairgrounds (Primary POD site)		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Main Road Office		Public Facility		X				X	X	X	X	X	X	X	X	X	X	X								X
Outside Property		Public Facility		X				X	X		X	X	X	X	X	X	X	X								X
Park Restrooms		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
PW Storage Barn		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X		X	X
PW Warehouse		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Recreation Dept.		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
School Hse Storage		Public Facility		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Senior Bldg		Public Facility		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Storage Bldg		Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Storage Warehouse		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X		X	X
Vancleave Arena (Secondary POD site)		Public Facility		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Warehouse (Maint)		Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X		X	X

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Alternative School		School		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
East Central High School		School		X				X	X	X	X	X	X	X	X	X	X	X								X
East Central Lower Elementary		School		X				X	X	X	X	X	X	X	X	X	X	X								X
East Central Middle School		School		X				X	X	X	X	X	X	X	X	X	X	X								X
East Central Upper Elementary		School		X				X	X	X	X	X	X	X	X	X	X	X								X
Jackson County Alternative School - Vancleave		School		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Jackson County Technology Center - Vancleave		School		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Mississippi Gulf Coast Community College Gautier Campus		School		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Orange Lake Elementary		School		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
St. Martin East Elementary School		School		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
St. Martin High School		School		X				X	X	X	X	X	X	X	X	X	X	X								X
St. Martin Middle School		School		X				X	X		X	X	X	X	X	X	X	X								X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
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St. Martin North Elementary School		School		X		X		X	X	X	X	X	X	X	X	X	X	X					X			X
St. Martin Upper Elementary School		School		X				X	X		X	X	X	X	X	X	X	X								X
Vancleave High School		School		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Vancleave Lower Elementary		School		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Vancleave Middle School		School		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Vancleave Upper Elementary		School		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Vocational Technical Center		School		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Central Jackson County Shelter		Shelter		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
East Jackson County Shelter		Shelter		X				X	X	X	X	X	X	X	X	X	X	X							X	X
West Jackson County Shelter		Shelter		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Big Oaks Trailer Park - Moss Point		Special Populations		X				X	X	X	X	X	X	X	X	X	X	X					X			X
Bluff Creek Campground		Special Populations		X				X	X	X	X	X	X	X	X	X	X	X					X			X
Camp Journey's End Campground		Special Populations		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X			X
Martin Lake Resort		Special Populations		X				X	X	X	X	X	X	X	X	X	X	X					X			X

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Presley's Outing		Special Populations		X	X			X	X	X	X	X	X	X	X	X	X	X								X
River Oaks Trailer Park - Moss Point		Special Populations		X				X	X	X	X	X	X	X	X	X	X	X					X			X
Riverbend Park Resort		Special Populations		X				X	X	X	X	X	X	X	X	X	X	X								X
Santa Maria Campground		Special Populations		X				X	X	X	X	X	X	X	X	X	X	X					X			X
White Sands Campground		Special Populations		X				X	X		X	X	X	X	X	X	X	X				X	X			X
Woodland Park Mobile Home Village - Moss Point		Special Populations		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Airport		Transportation		X		X		X	X		X	X	X	X	X	X	X	X					X		X	X
Ocean Springs Airport (private)		Transportation		X		X		X	X	X	X	X	X	X	X	X	X	X								X
Jackson County Utility Authority WWTP - Moss Point		Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Jackson County Utility Authority WWTP - Pascagoula		Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Jackson County Utility Authority WWTP - Vancleave		Water/ wastewater		X				X	X		X	X	X	X	X	X	X	X								X
River Pump Station		Water/ wastewater		X	X			X	X		X	X	X	X	X	X	X	X				X	X			X

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Water Tower-Rear of 2502 College Circle		Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Water Tower-Next to 1416 Lark Dr.		Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Water Tower (Mall)-W of 290 Dolphin Dr.		Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X	X				X		X	X
Water Well #1 & #6		Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Water Well #10		Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Well #11		Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X				X	X			X
Water Well #4		Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X								X
Water Well #7		Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X	X				X		X	X
Water Well #8		Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Well #9		Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X							X	X
Central Fire Sta.	Gautier	Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Martin Bluff Fire Sta.	Gautier	Fire Station		X				X	X	X	X	X	X	X	X	X	X	X					X			X
Willie Ladnnier Fire Sta.	Gautier	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X								X

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Gautier Police Dept.	Gautier	Police Station		X		X		X	X		X	X	X	X	X	X	X	X				X	X		X	X
City Hall North	Gautier	Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X		X	X
College Park Elementary	Gautier	School		X		X		X	X		X	X	X	X	X	X	X	X					X	X	X	X
Gautier Elementary School	Gautier	School		X		X		X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Gautier High School	Gautier	School		X				X	X		X	X	X	X	X	X	X	X					X			X
Gautier Middle School	Gautier	School		X		X		X	X	X	X	X	X	X	X	X	X	X								X
Martin Bluff Elementary School	Gautier	School		X				X	X	X	X	X	X	X	X	X	X	X					X			X
Singing River Elementary School	Gautier	School		X				X	X		X	X	X	X	X	X	X	X								X
Moss Point Central Fire Station	Moss Point	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Moss Point Dr. M. L. K. Fire Station	Moss Point	Fire Station		X				X	X	X	X	X	X	X	X	X	X	X					X		X	X
Moss Point Kreole Fire Station	Moss Point	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Moss Point North Fire Station	Moss Point	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X			X	X	X	X		X
City of Moss Point Police Dept.	Moss Point	Police Station		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
City of Moss Point (City Hall)	Moss Point	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
City of Moss Point (Public Works)	Moss Point	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Alternative Learning Center	Moss Point	School		X	X			X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Charlotte Hyatt Elementary School	Moss Point	School		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
East Park Elementary School	Moss Point	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Escatawpa Elementary	Moss Point	School		X		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X			X
God's LIttle Angels	Moss Point	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Kidde Kollege	Moss Point	School		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Kreole Elementary School	Moss Point	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Little People Learning Center	Moss Point	School		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Magnolia Junior High School	Moss Point	School		X	X			X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Moss Point High School	Moss Point	School		X				X	X	X	X	X	X	X	X	X	X	X					X			X
The Punkin Patch	Moss Point	School		X	X			X	X	X	X	X	X	X	X	X	X	X			X	X	X			X
University of Lil' Tots	Moss Point	School		X		X		X	X	X	X	X	X	X	X	X	X	X			X	X	X			X
West Elementary School	Moss Point	School		X		X		X	X	X	X	X	X	X	X	X	X	X					X		X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
1st Missionary Baptist Church	Moss Point	Shelter		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
2nd Missionary Baptist Church	Moss Point	Shelter		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
East Park School	Moss Point	Shelter		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Emergency Shelter	Moss Point	Shelter		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Johnson House Personal Care Home	Moss Point	Special Populations		X	X			X	X	X	X	X	X	X	X	X	X	X			X	X	X		X	X
Pathway Personal Care Home	Moss Point	Special Populations		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Providence Home Care	Moss Point	Special Populations		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Rehabilitation Centers	Moss Point	Special Populations		X	X			X	X	X	X	X	X	X	X	X	X	X			X	X	X			X
Serenity Assisted Living Manor	Moss Point	Special Populations		X				X	X	X	X	X	X	X	X	X	X	X					X		X	X
Singing River Rehab & Nursing	Moss Point	Special Populations		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
We Care Hospice	Moss Point	Special Populations		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Lift stations, wells, and pumping stations in the City	Moss Point	Water/ wastewater		X				X	X		X	X	X	X	X	X	X	X								X
EOC	Ocean Springs	EOC		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Fire Station 1-- Central	Ocean Springs	Fire Station		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Fire Station 2-- Bernard Beaugez	Ocean Springs	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Fire Station 3-- Champ Gay	Ocean Springs	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Fire Station 4-- Main/EOC	Ocean Springs	Fire Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Hospital	Ocean Springs	Medical		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
On Call Urgent Care Center	Ocean Springs	Medical		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Police Station	Ocean Springs	Police Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Police Station	Ocean Springs	Police Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Police Station/Jail/Court-Under Construction	Ocean Springs	Police Station		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Mary C. O'Keefe Cultural Center for Arts and Education	Ocean Springs	Private/Non-Profit		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Walter Anderson Museum	Ocean Springs	Private/Non-Profit		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Armory Building	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Fort Maurepas	Ocean Springs	Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X					X		X	X

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FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Ocean Springs City Hall	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Civic Center	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Community Center	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Harbor--County Building	Ocean Springs	Public Facility		X			X	X	X		X	X	X	X	X	X	X	X	X				X		X	X
Ocean Springs Human Resources	Ocean Springs	Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Library	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Parks & Recreation	Ocean Springs	Public Facility		X				X	X	X	X	X	X	X	X	X	X	X					X		X	X
Ocean Springs Planning Dept.	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Public Works	Ocean Springs	Public Facility		X				X	X		X	X	X	X	X	X	X	X								X
Ocean Springs Public Works Maintenance Bldg	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Senior Center	Ocean Springs	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Alternative Education Center	Ocean Springs	School		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X

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FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Elizabeth H. Keys Technology Center	Ocean Springs	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Grace Baptist Academy	Ocean Springs	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Greyhound Stadium Fieldhouse	Ocean Springs	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Magnolia Park Elementary	Ocean Springs	School		X		X		X	X	X	X	X	X	X	X	X	X	X					X		X	X
Oak Park Elementary	Ocean Springs	School		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs High School	Ocean Springs	School		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Middle School	Ocean Springs	School		X		X		X	X	X	X	X	X	X	X	X	X	X					X		X	X
Ocean Springs School District Administration Bldg	Ocean Springs	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Pecan Park Elementary	Ocean Springs	School		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
St. Alphonsus Catholic School	Ocean Springs	School		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Taconi School	Ocean Springs	School		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
University of Southern Mississippi – Gulf Coast Research	Ocean Springs	School		X		X		X	X	X	X	X	X	X	X	X	X	X								X

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Dorchester Arms	Ocean Springs	Special Populations		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Nursing Center	Ocean Springs	Special Populations		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Samaritan House Retirement Apartments	Ocean Springs	Special Populations		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
The Gardens	Ocean Springs	Special Populations		X				X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Villa Maria Retirement Apartments	Ocean Springs	Special Populations		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Ocean Springs Airport	Ocean Springs	Transportation		X		X		X	X	X	X	X	X	X	X	X	X	X								X
Water Tower- 405 Halstead Drive	Ocean Springs	Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X					X		X	X
Water Tower- 828 Handy Road	Ocean Springs	Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Tower- 514 Washington Avenue	Ocean Springs	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Tower- 602 Pine Drive	Ocean Springs	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Tower- (Civic Center) 3706 Highway 90	Ocean Springs	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Tower and Well- Sunplex Industrial Park	Ocean Springs	Water/ wastewater		X				X	X		X	X	X	X	X	X	X	X				X	X			X

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Water Well- 3044 Pabst Rd	Ocean Springs	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Water Well- 1501 Deana Road	Ocean Springs	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Bell South Switching Station	Pascagoula	Comm		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Jackson County Emergency Management Agency	Pascagoula	EOC		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Bayou Cassette Fire Station	Pascagoula	Fire Station		X	X			X	X	X	X	X	X	X	X	X	X	X					X			X
Central Fire Station	Pascagoula	Fire Station		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Lake Fire Station	Pascagoula	Fire Station		X				X	X		X	X	X	X	X	X	X	X								X
Acadian Ambulance Service	Pascagoula	Medical		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Singing River Hospital	Pascagoula	Medical		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Sheriff's Department	Pascagoula	Police Station		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Pascagoula Police Department	Pascagoula	Police Station		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Mississippi Power Company Work Yard	Pascagoula	Power/Gas		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
American Red Cross	Pascagoula	Private/Non-Profit		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X

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Blossman Propane	Pascagoula	Private/Non-Profit		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Central Appliance	Pascagoula	Private/Non-Profit		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Chevron Products	Pascagoula	Private/Non-Profit		X	X			X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
First Chemical	Pascagoula	Private/Non-Profit		X	X			X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Gulf Concrete	Pascagoula	Private/Non-Profit		X		X		X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X
Gulf Sales and Supply	Pascagoula	Private/Non-Profit		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jerry Lee's Grocery and Market	Pascagoula	Private/Non-Profit		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Lowe's Building Supply	Pascagoula	Private/Non-Profit		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Midstream Fuel Service	Pascagoula	Private/Non-Profit		X	X			X	X		X	X	X	X	X	X	X	X			X		X	X	X	X
Pandle Incorporated	Pascagoula	Private/Non-Profit		X	X			X	X		X	X	X	X	X	X	X	X			X		X		X	X
Rolls Royce Naval Marine 3	Pascagoula	Private/Non-Profit		X	X			X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Sav-A-Lot Grocery	Pascagoula	Private/Non-Profit		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Signal International	Pascagoula	Private/Non-Profit		X		X		X	X		X	X	X	X	X	X	X	X		X	X		X	X	X	X
The Salvation Army	Pascagoula	Private/Non-Profit		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
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Wal-Mart	Pascagoula	Private/Non-Profit		X				X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Wayne Lee's Grocery and Market	Pascagoula	Private/Non-Profit		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Board of Supervisors	Pascagoula	Public Facility		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Jail	Pascagoula	Public Facility		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Pascagoula City Hall	Pascagoula	Public Facility		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Pascagoula Public Housing Authority	Pascagoula	Public Facility		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Pascagoula Public Works Dept - Yard and Building Department	Pascagoula	Public Facility		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
U.S. Coast Guard Facility	Pascagoula	Public Facility		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Applied Technology Center	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Arlington Heights Elementary School	Pascagoula	School		X	X			X	X	X	X	X	X	X	X	X	X	X			X		X		X	X
Beach Elementary School	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X							X	X
Bethel Academy	Pascagoula	School		X	X			X	X	X	X	X	X	X	X	X	X	X			X					X
Central Elementary School	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Cherokee Elementary School	Pascagoula	School		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Colmer Middle School	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
Eastlawn Elementary School	Pascagoula	School		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Fair Elementary School	Pascagoula	School		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Family Interactive Center	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Instructional Administrative Service Center	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Jackson County School for Exceptional Children	Pascagoula	School		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson Elementary School	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
Lake Elementary School	Pascagoula	School		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X		X	X
Opportunity Center	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Pascagoula High School	Pascagoula	School		X		X		X	X		X	X	X	X	X	X	X	X					X	X	X	X
Pascagoula Opportunity Center	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Pascagoula Vocational Technical Center	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Resurrection Catholic Elementary School	Pascagoula	School		X	X			X	X	X	X	X	X	X	X	X	X	X			X					X
Resurrection Middle/High School	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
St. Peter the Apostle Catholic School	Pascagoula	School		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Sugar Bear's Daycare	Pascagoula	School		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Trent Lott Middle School	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
William H. Colmer Jr. High	Pascagoula	School		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
Bay Tower Assisted Living	Pascagoula	Special Populations		X				X	X		X	X	X	X	X	X	X	X								X
Chateau Deville Nursing Home	Pascagoula	Special Populations		X				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Plaza Community Living Center	Pascagoula	Special Populations		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Restoration Adult Home Care Center	Pascagoula	Special Populations		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Willow Creek Senior Housing	Pascagoula	Special Populations		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
14th Street Well	Pascagoula	Water/ wastewater		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
A Blue Lake LiftStation	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
A North Market Well	Pascagoula	Water/ wastewater		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Bayou Cassotte Water Purification Plant and Well 3	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X			X
Beach Well	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X						X	X	X
Belair/Monclair Lift Station	Pascagoula	Water/ wastewater		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
Belair/Washington Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X								X
Briarwood Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Chicot and Ingalls Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X			X					X
Communy Water Purification Plant and Well #1, #2 & #3	Pascagoula	Water/ wastewater		X	X			X	X		X	X	X	X	X	X	X	X					X		X	X
Criswell Water Purification Plant	Pascagoula	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Delmas Lift Station	Pascagoula	Water/ wastewater		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Douglas Well	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X			X					X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Emerson Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X		X	X
Ford Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Hospital! Old Mobile Lift Station	Pascagoula	Water/ wastewater		X	X			X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Jackson County Utility Authority Wastewater Treatment Facility	Pascagoula	Water/ wastewater		X	X			X	X		X	X	X	X	X	X	X	X					X	X	X	X
Kenneth Lift Station	Pascagoula	Water/ wastewater		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Live Oak Lift Station	Pascagoula	Water/ wastewater		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Louise Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X			X		X		X	X
Magnolia Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X	X	X	X
Market/Parsley Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X							X	X
Moreland Lift Station	Pascagoula	Water/ wastewater		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
North River Road Lift Station	Pascagoula	Water/ wastewater		X			X	X	X		X	X	X	X	X	X	X	X	X				X	X	X	X
Orchard Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X		X	X
Pine Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X		X	X

			Flood-Related					Fire-Related			G	Wind-Related							Other Hazards							
FACILITY NAME	CITY/TOWN (if applicable)	FACILITY TYPE	Dam and Levee Failure	Erosion	Flood – 100 year	Flood – 500 year	Flood – VE-zone	Drought	Lightning	Wildfire	Earthquake	Extreme Cold	Extreme Heat/ Heat Wave	Hailstorm	Hurricane and Tropical Storm	Severe Thunderstorm/ High Wind	Tornado	Winter Weather	Sea Level Rise- 3 feet	Fixed HAZMAT – 0.5 mile	Fixed HAZMAT – 1.0 mile	Mobile HAZMAT – 0.5 mile (road)	Mobile HAZMAT – 1.0 mile (road)	Mobile HAZMAT – 0.5 mile (rail)	Mobile HAZMAT – 1.0 mile (rail)	Infectious Disease
Poitevin Lift Station	Pascagoula	Water/ wastewater		X				X	X	X	X	X	X	X	X	X	X	X								X
Searstown Lift Station	Pascagoula	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Searstown Well	Pascagoula	Water/ wastewater		X		X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Sherwood Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X					X		X	X
South River Road Lift Station	Pascagoula	Water/ wastewater		X	X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X
Telephone Well	Pascagoula	Water/ wastewater		X		X		X	X		X	X	X	X	X	X	X	X				X	X	X	X	X
Washington Bayou Lift Station	Pascagoula	Water/ wastewater		X			X	X	X	X	X	X	X	X	X	X	X	X			X					X

D.4 JACKSON COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Jackson County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

D.4.1 Planning and Regulatory Capability

Table D.53 provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Jackson County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 9 Regional Hazard Mitigation Plan.

TABLE D.53: RELEVANT PLANS, ORDINANCES, AND PROGRAMS

Planning Tool/Regulatory Tool	Hazard Mitigation Plan	Threat and Hazard Identification and Risk Assessment (THIRA)	Comprehensive Land Use Plan	Floodplain Management Plan/Flood Mitigation Plan	Open Space Management Plan (Parks & Rec/Greenway Plan	Stormwater Management Plan/Ordinance	Natural Resource Protection Plan	Flood Response Plan	Emergency Operations Plan	Emergency Management Accreditation Program (EMAP Accreditation)	Continuity of Operations Plan	Evacuation Plan	Disaster Recovery Plan	Capital Improvements Plan	Economic Development Plan	Historic Preservation Plan	Flood Damage Prevention Ordinance	Zoning Ordinance	Subdivision Ordinance	Unified Development Ordinance	Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance	Building Code	Fire Code	National Flood Insurance Program (NFIP)	NFIP Community Rating System (CRS Program)
JACKSON COUNTY	✓		✓			✓			✓			✓			✓		✓	✓	✓			✓	✓	✓	✓
Gautier	†		✓		✓	✓			✓			†		✓	†		✓	✓	✓	✓		✓	✓	✓	✓
Moss Point	✓		✓						✓			†			†		✓	✓	✓			✓	✓	✓	
Ocean Springs	✓		✓			✓			✓			†			†		✓	✓	✓	✓		✓	✓	✓	✓
Pascagoula	✓		✓		✓	✓			✓			†			†		✓	✓	✓	✓		✓	✓	✓	✓

A more detailed discussion on the county's planning and regulatory capabilities follows.

EMERGENCY MANAGEMENT

Hazard Mitigation Plan
Jackson County has previously adopted a hazard mitigation plan. The City of Gautier was also included in this plan. The cities of Moss Point, Ocean Springs, and Pascagoula have also previously adopted municipal-level hazard mitigation plans.

Emergency Operations Plan
Jackson County maintains an emergency operations plan through its Emergency Management Agency. The cities of Gautier, Moss Point, Ocean Springs, and Pascagoula have also each adopted a municipal-level emergency operations plan.

GENERAL PLANNING

Comprehensive Land Use Plan
Jackson County has adopted a county comprehensive plan. The cities of Gautier, Moss Point, Ocean Springs, and Pascagoula have also adopted municipal comprehensive plans.

Capital Improvements Plan
Jackson County has not adopted a capital improvements plan. However, the City of Gautier has adopted a capital improvements plan.

Historic Preservation Plan
Neither Jackson County nor any of its participating municipalities have a historic preservation plan. However, the cities of Gautier, Ocean Springs, and Pascagoula have each adopted a historic preservation ordinance.

Zoning Ordinance
Jackson County and the cities of Gautier, Moss Point, Ocean Springs, and Pascagoula have each adopted a zoning ordinance. The cities of Gautier, Ocean Springs, and Pascagoula include zoning regulations as part of their local unified development ordinances. The remaining jurisdictions have adopted stand-alone zoning ordinances.

Subdivision Ordinance
Jackson County and the cities of Gautier, Moss Point, Ocean Springs, and Pascagoula have each adopted a subdivision ordinance. The cities of Gautier, Ocean Springs, and Pascagoula include subdivision regulations as part of their local unified development ordinances. The remaining jurisdictions have adopted stand-alone subdivision ordinances.

Building Codes, Permitting, and Inspections
After Hurricane Katrina, Mississippi Legislature mandated the adoption of the International Building Code and International Residential Code in five coastal counties including Jackson County. The cities of Gautier, Moss Point, Ocean Springs, and Pascagoula have also adopted building codes.

FLOODPLAIN MANAGEMENT

Table D.54 provides NFIP policy and claim information for each participating jurisdiction in Jackson County.

TABLE D.54: NFIP POLICY AND CLAIM INFORMATION

Jurisdiction	Date Joined NFIP	Current Effective Map Date	NFIP Policies in Force	Insurance in Force	Closed Claims	Total Payments to Date
JACKSON COUNTY†	04/03/78	03/16/09	5,996	$1,507,783,300	3,810	$303,874,274
Gautier	11/13/86	03/16/09	1,724	$434,030,100	681	$59,663,535
Moss Point	09/18/70	03/16/09	1,131	$238,909,100	886	$28,225,055
Ocean Springs	09/18/70	03/16/09	2,622	$749,420,700	823	$86,224,366
Pascagoula	09/18/70	03/16/09	4,944	$1,164,782,600	2,763	$221,292,452

†Includes unincorporated areas of county only
Source: NFIP Community Status information as of 1/10/2017; NFIP claims and policy information as of 10/31/2016

Community Rating System
Jackson County (Class 9) as well as the cities of Gautier (Class 7), Ocean Springs (Class 6), and Pascagoula (Class 7) participate in the CRS. Participation in the CRS program should be considered as a mitigation action by the City of Moss Point. The program would beneficial to the city which has 1,131 NFIP policies in force.

Flood Damage Prevention Ordinance
All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Jackson County and the cities of Gautier, Moss Point, Ocean Springs, and Pascagoula all participate in the NFIP and have adopted flood damage prevention ordinances.

Open Space Management Plan
Jackson County has not adopted a county open space management plan. However, the cities of Gautier and Pascagoula each have a municipal parks and recreation master plan in place.

Stormwater Management Plan
Jackson County and the City of Gautier have both adopted a stormwater management plan. The cities of Gautier, Ocean Springs, and Pascagoula have adopted local stormwater management ordinances.

D.4.2 Administrative and Technical Capability

Table D.55 provides a summary of the capability assessment results for Jackson County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

TABLE D.55: RELEVANT STAFF/PERSONNEL RESOURCES

Staff/Personnel Resource	Planners with knowledge of land development/land management practices	Engineers or professionals trained in construction practices related to buildings and/or infrastructure	Planners or engineers with an understanding of natural and/or human-caused hazards	Emergency Manager	Floodplain Manager	Land Surveyors	Scientists familiar with the hazards of the community	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS and/or Hazus	Resource development staff or grant writers
JACKSON COUNTY	✓	✓	✓	✓	✓		✓	✓	✓	✓
Gautier	✓	✓	✓	†	✓		†	✓	✓	✓
Moss Point		✓	✓	†	✓		†	✓	†	
Ocean Springs	✓	✓	✓	†	✓		†	✓		✓
Pascagoula	✓	✓	✓	✓	✓		†	✓	✓	✓

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

D.4.3 Fiscal Capability

Table D.56 provides a summary of the results for Jackson County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

TABLE D.56: RELEVANT FISCAL RESOURCES

Fiscal Tool/Resource	Capital Improvement Programming	Community Development Block Grants (CDBG)	Special Purpose Taxes (or taxing districts)	Gas/Electric Utility Fees	Water/Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation, Revenue, and/or Special Tax Bonds	Partnering Arrangements or Intergovernmental Agreements	Other: HMGP and other federal, state, and private grants/resources
JACKSON COUNTY	†								†	✓
Gautier	†								†	✓
Moss Point	†	✓	†	†	†			†	†	✓
Ocean Springs		✓			†				†	✓
Pascagoula	†	†		†	†			†	†	✓

D.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Jackson County is more likely to shift in support of hazard mitigation efforts.

Table D.57 provides a summary of the results for Jackson County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

TABLE D.57: LOCAL POLITICAL SUPPORT

Political Support	Limited	Moderate	High
JACKSON COUNTY			✓
Gautier			✓
Moss Point		✓	
Ocean Springs			✓
Pascagoula			✓

D.4.5 Conclusions on Local Capability

Table D.58 shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions' government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 46.2, which falls into the moderate capability ranking.

TABLE D.58: CAPABILITY ASSESSMENT RESULTS

Jurisdiction	Overall Capability Score	Overall Capability Rating
JACKSON COUNTY	46	Moderate
Gautier	46	Moderate
Moss Point	41	Moderate
Ocean Springs	46	Moderate
Pascagoula	52	High

D.5 JACKSON COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Jackson County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

D.5.1 Mitigation Goals

Jackson County developed nine mitigation goals in coordination with the other participating MEMA District 9 Region jurisdictions. The regional mitigation goals are presented in **Table D.59**.

TABLE D.59: MEMA DISTRICT 9 REGIONAL MITIGATION GOALS

	Goal
Goal #1	Minimize risk and vulnerability of the community to hazards.
Goal #2	Minimize loss of life, injury, and damages to property, the economy, and the environment.
Goal #3	Minimize loss to critical facilities and infrastructure, utilities, and services.
Goal #4	Improve, expand, and enhance public education, awareness, and preparedness.
Goal #5	Build and enhance local mitigation capabilities to improve the region's ability to prepare for, respond to, and recover.
Goal #6	Enter into partnerships with neighboring jurisdictions, federal and state agencies, and others to share information and develop a more hazard resistant community.

	Goal
Goal #7	Enhance response procedures and emergency management capabilities.
Goal #8	Reduce economic losses, minimize social disruptions, and maintain quality of life.
Goal #9	Protect the environment and natural resources.

D.5.2 Mitigation Action Plan

The mitigation actions proposed by Jackson County and the cities of Gautier, Moss Point, Ocean Springs, and Pascagoula are listed in the following individual Mitigation Action Plans.

Jackson County Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Prevention							
P-1	Enforce building codes.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 14 in previous plan) The county has maintained its practice of enforcing building codes over the past several years. It will evaluate these codes in the coming years and ensure that they are still being enforced properly so this action will remain in place.
P-2	Maintain debris program to clean drainage ways from existing properties and critical facilities.	Flood	High	Gautier Street Division; Jackson County Road Department	Internal	2022	(Action 16 in previous plan) The county has developed and maintained a debris program that has been successful, but there are likely some areas where the county can improve this program in the future, so this action will remain in place.
P-3	Maintain debris program to clear roadside ditches and culverts.	Flood	High	Gautier Street Division; Jackson County Road Department	Internal	2022	(Action 17 in previous plan) The county has developed and maintained a debris program that has been successful, but there are likely some areas where the county can improve this program in the future, so this action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-4	Develop/enforce landscaping requirements to provide absorption of average volumes of rainfall on property.	Flood	Moderate	Gautier and Jackson County Planning Departments	Internal	2022	(Action 18 in previous plan) The county has developed some requirements related to landscaping, but these may need to be revised and reviewed for improving enforcement so the county will keep this plan in place.
P-5	Enforce storm water ordinances and encourage use of pervious surfaces and natural absorption of rainwater.	Flood	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 20 in previous plan) The county has worked to enforce its stormwater ordinances and encourage use of pervious surfaces in construction, but there are still many areas where there is room for improvement in this regard so the county will maintain this action.
P-6	Enforce the revised Digital Flood Insurance Rate Map (DFIRM).	Flood	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 21 in previous plan) The county has reviewed the DFIRM and is currently enforcing all regulations that pertain to areas located in flood zones. The county will evaluate its regulations related to floodplains to ensure that they are up to the highest possible standard feasible.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-7	Control vegetation growth around critical facilities.	Wildfire	High	Gautier Street Division; Jackson County Road Department	Internal	2022	(Action 23 in previous plan) The county has monitored vegetation growth around most critical facilities, but there is still additional work to be done related to managing this growth around critical facilities so the county will keep this action in place.
P-8	Coordinate prescribed burns in heavily forested areas with state and federal agencies.	Wildfire	High	Gautier and Jackson County Fire Departments	Internal	2022	(Action 24 in previous plan) When necessary, the county has worked with state and federal agencies to initiate prescribed burns. This practice will need to be continually evaluated and coordination with the proper agencies is also needed so the action will stay in place.
P-9	Conduct a study of the effects of sea level rise and develop mitigation strategies to minimize those effects.	Sea Level Rise	Low	Gautier and Jackson County Planning Departments	Internal	2022	(Action 26 in previous plan) No localized study of the effects of sea level rise has been carried out, though there have been some national level studies. The county will continue to pursue a more localized evaluation of the impacts of sea level rise in the future.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-10	Encourage private land owners on waterfronts to implement erosion control measures.	Erosion	Low	Gautier and Jackson County Planning Departments	Internal	2022	(Action 27 in previous plan) Some efforts have been made to encourage private land owners to implement erosion control measures on their property, but many have still not taken the necessary steps, so the county will continue to encourage these actions going forward.
P-11	Develop/enforce water use ordinance to address drought condition procedures.	Drought	High	Gautier and Jackson County Planning Departments	Internal	2020	(Action 28 in previous plan) The county has not developed a specific ordinance to address drought condition procedures, but it has enacted some restrictions in the past. The county will continue to look at adopting a specific ordinance to this effect.
P-12	Conduct study on aquifers to determine impacts on public and private wells.	Drought	Moderate	Jackson County Utility Authority	Jackson County Utility Authority	2022	(Action 29 in previous plan) The county has not conducted a study of aquifers due to a lack of funding, but this is still a priority action that must be coordinated with the utility authority, so the action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-13	Implement dredging program for the Bayou areas to improve effects of sediment buildup caused by storm surge.	Storm Surge	Moderate	Gautier Public Works; Jackson County Public Works	MDMR, USACE, NRCS, CIAP, Tideland	2022	(Action 33 in previous plan) Some dredging has been done in the Bayou areas, but an official program has not been implemented to the scale necessary to prevent all impacts from storm surge so the county will continue to work on improving the implementation of this action in the future.
P-14	Develop continuity of operations plans.	All	High	Jackson County and City of Gautier	Internal	2020	(Action 49 in previous plan) The county has not developed a formal continuity of operations plan, but does have some strategies in place to ensure continuity of operations. The county will work to develop a formal plan going forward.
P-15	Develop Emergency response plans.	All	High	Jackson County and City of Gautier	Internal	2022	(Action 50 in previous plan) The county has developed an emergency operations plan, but it will need to be reviewed in the coming years to ensure it still identifies proper protocols. This action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-16	Develop capital improvement plans.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 52 in previous plan) The county does not have a formal CIP, but it does have a program in place for spending on infrastructure. The county will continue to work on implementing this program and evaluating the development of a formal CIP.
P-17	Develop/enhance asset inventories (e.g., critical facilities, infrastructure, equipment) into GIS.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 55 in previous plan) During this plan update, a number of additional critical facilities were digitized into GIS. However, some facilities were still not included in this digitization so the county will continue to work on this.
P-18	Upgrade devices used for damage assessments and communication as technology improves/changes.	All	High	Jackson County Emergency Management Agency	Internal	2022	(Action 56 in previous plan) The county has devices it uses for damage assessments, but these devices are indeed getting out of date so it will look for ways to improve its assets in this area where possible going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-19	Seek opportunities to continue to lower the CRS rating (and insurance rate).	Flood	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 57 in previous plan) The county participates in the CRS, but it has not reached a level 1 yet, so there are certainly ways in which the county can improve its program and score more points. The county will continue to evaluate the best steps it can take to do this.
P-20	Incorporate the goals and objectives of the hazard mitigation plan into all planning documents and ordinances.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 58 in previous plan) The goals of the hazard mitigation plan have been incorporated into other planning documents, but as this plan and those documents are updated, additional effort to ensure up to date information will be needed.
P-21	Conduct annual review of the hazard mitigation plan.	All	High	Hazard Mitigation Council; Gautier and Jackson County Planning Departments	Internal	2017, Annually	(Action 59 in previous plan) The county has conducted annual reviews of its hazard mitigation plan, but this action will need to be kept in place as the county plans to continue this practice.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-22	Conduct evaluation of mitigation strategies and projects following a hazard impact.	All	High	Hazard Mitigation Council; Jackson County Emergency Management Agency	Internal	2022	(Action 60 in previous plan) The county has evaluated mitigation actions after hazards have impacted the community and generally tried to update the mitigation plan accordingly, but this has not always been the case so the county will work on improving its implementation of this action.
P-23	Document damages/losses sustained from natural hazards.	All	High	Jackson County Emergency Management Agency	Internal	2022	(Action 61 in previous plan) For the most part, the county has documented damage caused by natural hazards, especially after very large events. However, the county would like to improve its documentation techniques for accuracy, so it will continue to work on this action.
P-24	Conduct After Action Reviews (AAR) following events to capture lessons learned, reassess damages incurred, and complete damage assessment forms with accurate information.	All	High	Hazard Mitigation Council	Internal	2022	(Action 62 in previous plan) The county has conducted AARs following many of its major disaster events, but there are certainly ways in which the county can improve its review process and so this action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Property Protection							
PP-1	Upgrade/harden water and wastewater facilities. (Gautier water towers/wells, Shell landing Wastewater Collection Systems, Jackson County motor control centers, Jackson County sanitary generators)	All	High	City of Gautier; Jackson County Utility Authority	HMA	2022	(Action 3 in previous plan) Although some efforts have been made to harden water/wastewater facilities in the county, there are still many that are unprotected and vulnerable so the county will retain this action.
PP-2	Harden existing critical facilities. (Gautier Police Dept., Gautier Public Works, Gautier Maintenance Shop, Singing River Hospital and Ocean Springs Hospital, Gautier Fire Dept., Pascagoula/Moss Point Wastewater Treatment Facility, and Escatawpa Wastewater Reclamation Facility).	All	High	City of Gautier; Jackson Count; Singing River Health	HMA	2022	(Action 4 in previous plan) Although some efforts have been made to harden critical facilities in the county, there are still many that are unprotected and vulnerable so the county will retain this action.
PP-3	Elevate/improve roads and bridges that are below base flood elevation.	Flood	High	Jackson County Road Dept.; Gautier Public Works	Local, State, Federal	2022	(Action 5 in previous plan) Many roads have been elevated above BFE in the county, but there are certainly some that have not and the county would like to work towards addressing those roads that are vulnerable to flooding.
PP-4	Relocate Jackson County Emergency Operation Center to county-owned property on Jim Ramsey Road.	All	High	Jackson County	HMA	2017	(Action 8 in previous plan) The county has not yet relocated its EOC to the property on Jim Ramsey Road but this is still in the works and the county will continue to push forward with this action.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-5	Relocate Jackson County Sheriff Dispatch/E-911 with EOC on Jim Ramsey Road or to existing EOC on Convent Avenue.	All	High	Jackson County	HMA	2017	(Action 9 in previous plan) The county has not yet relocated its EOC to the property on Jim Ramsey Road but this is still in the works and the county will continue to push forward with this action.
PP-6	Encourage use of underground utilities in higher elevation areas.	All	Moderate	Gautier and Jackson County Planning Departments	Internal	2022	(Action 11 in previous plan) The county has evaluated the use of underground utilities in areas that are high enough that those utilities will not be flooded. This is very location dependent, so the county will continue to implement where it makes the most sense in the future.
PP-7	Construct all new critical facilities and infrastructure with materials designed to minimize impacts from all hazards.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 12 in previous plan) The county has attempted to build all new critical facilities up to a standard that will protect them as best as possible from hazard impacts. As new facilities are constructed, the county will continue to try to build to the best possible standard.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-8	Identify location for community safe rooms in Gautier and Jackson County to accommodate the remaining population not covered in the existing safe rooms.	All	High	Gautier City Council; Jackson County Board of Supervisors	HMA	2022	(Action 13 in previous plan) Several safe rooms have been identified across the county but these do not cover the entirety of the county population, so additional safe rooms will need to be identified.
PP-9	Acquisition/demolition of Severe Repetitive Loss Properties (SRL) and Repetitive Flood Claim (RFC) properties by continuing to apply for FMA to mitigate when practical.	Flood	High	Gautier and Jackson County Planning Departments	FMA	2022	(Action 19 in previous plan) The county has mitigated a number of repetitive/severe repetitive loss properties, but there are still a number of these types of properties that need to be mitigated so the county will keep this action in place.
PP-10	Raise lift stations and other critical infrastructure above base floodplain where feasible.	Flood	High	Jackson County Utility Authority; City of Gautier	Local	2022	(Action 22 in previous plan) Some lift stations have been raised above the BFE, but others have not and there is still significant critical infrastructure located in the floodplain. The county will look at ways to mitigate the impacts to this infrastructure in the future.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-11	Encourage existing and new developments to include surge and lightning protectors and use of enhanced construction materials.	Lightning	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 30 in previous plan) The county has encouraged developers to include surge and lightning protectors in new construction, but this has not always been implemented so the county will retain this action and continue to encourage this going forward.
PP-12	Implement mast arm traffic signal improvements.	All	High	Gautier Street Division; Jackson County Road Department	Local	2022	(Action 31 in previous plan) The county has implemented mast arms at several intersections, but there are many where mast arms are still not in place so the county will continue to pursue this action going forward.
PP-13	Mount street signs to existing mast arm traffic signals.	All	High	Gautier Street Division; Jackson County Road Department	Local	2022	(Action 32 in previous plan) In many cases where mast arms are in place, street signs have been mounted to the mast arms, but as many intersections do not have mast arms, this action will need to be retained.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Natural Resource Protection							
NRP-1	Develop/maintain a beach erosion and renourishment program.	Erosion	Moderate	Gautier and Jackson County Public Works	Internal	2022	(Action 25 in previous plan) The county has implemented beach renourishment in many locations to reduce the effects of erosion, but since erosion is a continual process, this action will need to be retained going forward.
Structural Projects							
SP-1	Coordinate with applicable agencies on constructing new roadways and bridges above the base flood elevation.	Flood	High	Gautier Public Works, Jackson County Road Department	Local	2022	(Action 15 in previous plan) The county has worked with state and federal DOTs to try to ensure that new roadways and bridges are constructed above BFE, but this will need to be addressed as more roads are constructed in the future.
Emergency Services							
ES-1	Identify and prioritize portable generator hook ups or permanent mount units for wells, lift stations, and facilities.	All	High	Jackson County; City of Gautier; Jackson County Utility	HMA	2020	(Action 1 in previous plan) The county has identified a number of locations for portable generator hookup and has generally prioritized those locations. However, there are still additional locations where the county would like to make hookups available so this action will remain in the plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
ES-2	Explore options for back up water supply system/service for Ocean Springs and Singing River Hospitals.	All	High	Singing River Health Systems	Local	2017	(Action 6 in previous plan) The hospitals have worked to identify alternative sources of water supply and service, but these will need to be checked on a regular basis to ensure these supplies are maintained. The county will keep this action in place.
ES-3	Develop agreements/reprocess for providing tie-ins and back up water service for Jackson County Utility Authority and Gautier.	All	High	Jackson County Utility Authority; Gautier Public Works	Local	2017	(Action 7 in previous plan) The county has developed some agreements for backup water supply service, but will need to continue to manage those agreements and ensure that backup water supplies remain available in the event of a disaster.
ES-4	Improve notification procedures of impending hazards and evacuation procedures.	All	High	Jackson County Emergency Management Agency	Local	2018	(Action 40 in previous plan) The county is consistently working on improving notification procedures for impending disasters, but there is still room for improvement and so the county will keep this action in place.
ES-5	Develop/update and conduct exercises on response procedures.	All	High	Jackson County and City of Gautier	Internal	2019	(Action 51 in previous plan) The county has developed and conducted a number of exercises on response procedures, but in order to remain on top of this sort of training, the county will plan to conduct additional exercises going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
ES-6	Increase evacuation route options and coordination of activation by working with state/federal agencies.	All	High	Jackson County Emergency Management Agency	Local	2020	(Action 53 in previous plan) Evacuation routes are identified for the county, but the county would like to identify additional routes that citizens can use to evacuate to speed the evacuation process overall.
ES-7	Improve signage/traffic control devices for evacuations.	All	High	Jackson County Emergency Management Agency	Local	2020	(Action 54 in previous plan) The county has experienced evacuations before and have provided both signage and traffic control. However, the county would like to improve both of these aspects of evacuations so this action will remain in the plan.
Public Education and Awareness							
PEA-1	Educate the public on all hazard preparedness.	All	High	Jackson County Emergency Management Agency	Local	2022	(Action 36 in previous plan) The county has put in extensive efforts to educate the public on all hazard preparedness, but this is a continuous process that needs to be constantly evaluated to ensure the public is aware of risks and actions they can take to reduce risk.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-2	Educate the public on all hazard mitigation programs (safe rooms, wind retrofit, etc.).	All	High	Jackson County Emergency Management Agency	Local	2022	(Action 37 in previous plan) The county has worked on educating the public about hazard mitigation programs and successfully encouraged many citizens to mitigate their homes/businesses. Nevertheless, many citizens are still not fully aware of programs available to assist them, so the county will keep this action in place.
PEA-3	Educate the public about the benefits of flood mitigation of homes and businesses.	Flood	High	Jackson County Emergency Management Agency	Local	2022	(Action 38 in previous plan) The county has focused on flood mitigation education with many home and business owners as this is a major threat to the community. Given that flood programs, funding, and insurance are constantly changing, this action will stay in place.
PEA-4	Continue to deliver programs to residents, business owners, and developers regarding best management practices for storm water control and household hazardous waste.	Flood, Hazardous Materials Incident	High	Gautier and Jackson County Planning Departments	Local	2022	(Action 39 in previous plan) The county has enacted several programs to help promote best practices for storm water control and household hazardous waste. However, many residents/businesses do not implement these practices so more education is likely required.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-5	Develop education materials for water conservation.	Drought	High	Gautier and Jackson County Planning Departments	Local	2022	(Action 41 in previous plan) The county has some information for the public on water conservation, but overall there needs to be more emphasis on getting citizens to implement these measures in the future.
PEA-6	Promote Firewise program to homeowners, builders/contractors, and developers.	Wildfire	High	Gautier and Jackson County Fire Departments	Local	2022	(Action 42 in previous plan) The county has encouraged the use of the Firewise program on many stakeholder groups, but there are still many areas that would benefit from implementing more elements of the Firewise program so this action will be retained.
PEA-7	Develop outreach strategies for non-English communities.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 43 in previous plan) The county has generally focused on English language outreach strategies, but with a growing population of non-English speakers, the county would like to put more emphasis on reaching those groups so it will focus on this action going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-8	Develop outreach strategies for tourists (i.e., part-time residents, RV campers, vacationers, etc.)	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 44 in previous plan) The county has tried to incorporate tourists into much of its planning, but outreach/education strategies aimed towards tourists are not as prevalent. This is an action the county will try to focus on in the future.
PEA-9	Develop outreach strategies for elderly and low-income residents.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 45 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the county will retain this action and try to provide extra focus on these populations.
PEA-10	Develop outreach strategies for the physically challenged.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 46 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the county will retain this action and try to provide extra focus on these populations.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-11	Develop outreach strategies for those with mental health disabilities.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 47 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the county will retain this action and try to provide extra focus on these populations.
PEA-12	Develop outreach strategies and implement school programs for children.	All	High	All school districts and daycare providers within the county	Local	2022	(Action 48 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the county will retain this action and try to provide extra focus on these populations.

City of Gautier Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Prevention							
P-1	Enforce building codes.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 14 in previous plan) The city has maintained its practice of enforcing building codes over the past several years. It will evaluate these codes in the coming years and ensure that they are still being enforced properly so this action will remain in place.
P-2	Maintain debris program to clean drainage ways from existing properties and critical facilities.	Flood	High	Gautier Street Division; Jackson County Road Department	Internal	2022	(Action 16 in previous plan) The city has developed and maintained a debris program that has been successful, but there are likely some areas where the city can improve this program in the future, so this action will remain in place.
P-3	Maintain debris program to clear roadside ditches and culverts.	Flood	High	Gautier Street Division; Jackson County Road Department	Internal	2022	(Action 17 in previous plan) The city has developed and maintained a debris program that has been successful, but there are likely some areas where the city can improve this program in the future, so this action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-4	Develop/enforce landscaping requirements to provide absorption of average volumes of rainfall on property.	Flood	Moderate	Gautier and Jackson County Planning Departments	Internal	2022	(Action 18 in previous plan) The city has developed some requirements related to landscaping, but these may need to be revised and reviewed for improving enforcement so the city will keep this plan in place.
P-5	Enforce storm water ordinances and encourage use of pervious surfaces and natural absorption of rainwater.	Flood	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 20 in previous plan) The city has worked to enforce its stormwater ordinances and encourage use of pervious surfaces in construction, but there are still many areas where there is room for improvement in this regard so the city will maintain this action.
P-6	Enforce the revised Digital Flood Insurance Rate Map (DFIRM).	Flood	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 21 in previous plan) The city has reviewed the DFIRM and is currently enforcing all regulations that pertain to areas located in flood zones. The city will evaluate its regulations related to floodplains to ensure that they are up to the highest possible standard feasible.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-7	Control vegetation growth around critical facilities.	Wildfire	High	Gautier Street Division; Jackson County Road Department	Internal	2022	(Action 23 in previous plan) The city has monitored vegetation growth around most critical facilities, but there is still additional work to be done related to managing this growth around critical facilities so the city will keep this action in place.
P-8	Coordinate prescribed burns in heavily forested areas with state and federal agencies.	Wildfire	High	Gautier and Jackson County Fire Departments	Internal	2022	(Action 24 in previous plan) When necessary, the city has worked with state and federal agencies to initiate prescribed burns. This practice will need to be continually evaluated and coordination with the proper agencies is also needed so the action will stay in place.
P-9	Conduct a study of the effects of sea level rise and develop mitigation strategies to minimize those effects.	Sea Level Rise	Low		Internal	2022	(Action 26 in previous plan) No localized study of the effects of sea level rise has been carried out, though there have been some national level studies. The city will continue to pursue a more localized evaluation of the impacts of sea level rise in the future.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-10	Encourage private land owners on waterfronts to implement erosion control measures.	Erosion	Low	Gautier and Jackson County Planning Departments	Internal	2022	(Action 27 in previous plan) Some efforts have been made to encourage private land owners to implement erosion control measures on their property, but many have still not taken the necessary steps, so the city will continue to encourage these actions going forward.
P-11	Develop/enforce water use ordinance to address drought condition procedures.	Drought	High	Gautier and Jackson County Planning Departments	Internal	2020	(Action 28 in previous plan) The city has not developed a specific ordinance to address drought condition procedures, but it has enacted some restrictions in the past. The city will continue to look at adopting a specific ordinance to this effect.
P-12	Implement dredging program for the Bayou areas to improve effects of sediment buildup caused by storm surge.	Storm Surge	Moderate	Gautier Public Works; Jackson County Public Works	Jackson County Utility Authority	2022	(Action 29 in previous plan) The city has not conducted a study of aquifers due to a lack of funding, but this is still a priority action that must be coordinated with the utility authority, so the action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-13	Develop continuity of operations plans.	All	High	Jackson County and City of Gautier	MDMR, USACE, NRCS, CIAP, Tideland	2022	(Action 33 in previous plan) Some dredging has been done in the Bayou areas, but an official program has not been implemented to the scale necessary to prevent all impacts from storm surge so the city will continue to work on improving the implementation of this action in the future.
P-14	Emergency response plans.	All	High	Jackson County and City of Gautier	Internal	2020	(Action 49 in previous plan) The city has not developed a formal continuity of operations plan, but does have some strategies in place to ensure continuity of operations. The city will work to develop a formal plan going forward.
P-15	Develop capital improvement plans.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 50 in previous plan) The city has developed an emergency operations plan, but it will need to be reviewed in the coming years to ensure it still identifies proper protocols. This action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-16	Develop/enhance asset inventories (e.g., critical facilities, infrastructure, equipment) into GIS.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 52 in previous plan) The city does not have a formal CIP, but it does have a program in place for spending on infrastructure. The city will continue to work on implementing this program and evaluating the development of a formal CIP.
P-17	Upgrade decides used for damage assessments and communication as technology improves/changes.	All	High	Jackson County Emergency Management Agency	Internal	2022	(Action 55 in previous plan) During this plan update, a number of additional critical facilities were digitized into GIS. However, some facilities were still not included in this digitization so the city will continue to work on this.
P-18	Seek opportunities to continue to lower the CRS rating (and insurance rate).	Flood	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 56 in previous plan) The city has devices it uses for damage assessments, but these devices are indeed getting out of date so it will look for ways to improve its assets in this area where possible going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-19	Incorporate the goals and objectives of the hazard mitigation plan into all planning documents and ordinances.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 57 in previous plan) The city participates in the CRS, but it has not reached a level 1 yet, so there are certainly ways in which the city can improve its program and score more points. The city will continue to evaluate the best steps it can take to do this.
P-20	Conduct annual review of the hazard mitigation plan.	All	High	Hazard Mitigation Council; Gautier and Jackson County Planning Departments	Internal	2022	(Action 58 in previous plan) The goals of the hazard mitigation plan have been incorporated into other planning documents, but as this plan and those documents are updated, additional effort to ensure up to date information will be needed.
P-21	Conduct evaluation of mitigation strategies and projects following a hazard impact.	All	High	Hazard Mitigation Council; Jackson County Emergency Management Agency	Internal	2017, Annually	(Action 59 in previous plan) The city has conducted annual reviews of its hazard mitigation plan, but this action will need to be kept in place as the city plans to continue this practice.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-22	Document damages/losses sustained from natural hazards.	All	High	Jackson County Emergency Management Agency	Internal	2022	(Action 60 in previous plan) The city has evaluated mitigation actions after hazards have impacted the community and generally tried to update the mitigation plan accordingly, but this has not always been the case so the city will work on improving its implementation of this action.
P-23	Conduct After Action Reviews (AAR) following events to capture lessons learned, reassess damages incurred, and complete damage assessment forms with accurate information.	All	High	Hazard Mitigation Council	Internal	2022	(Action 61 in previous plan) For the most part, the city has documented damage caused by natural hazards, especially after very large events. However, the city would like to improve its documentation techniques for accuracy, so it will continue to work on this action.
Property Protection							
PP-1	Retrofit critical facilities with safe rooms, including the Fire, Police, Public Works, and City Hall facilities.	All	Moderate	City of Gautier	HMA	2022	(Action 2 in previous plan) Although some efforts have been made to harden critical facilities in the city, there are still many that are unprotected and vulnerable so the city will retain this action.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-2	Upgrade/harden water and wastewater facilities. (Gautier water towers/wells, Shell landing Wastewater Collection Systems, Jackson County motor control centers, Jackson County sanitary generators)	All	High	City of Gautier; Jackson County Utility Authority	HMA	2022	(Action 3 in previous plan) Although some efforts have been made to harden water/wastewater facilities in the city, there are still many that are unprotected and vulnerable so the city will retain this action.
PP-3	Harden existing critical facilities. (Gautier Police Dept., Gautier Public Works, Gautier Maintenance Shop, Singing River Hospital and Ocean Springs Hospital, Gautier Fire Dept., Pascagoula/Moss Point Wastewater Treatment Facility, and Escatawpa Wastewater Reclamation Facility).	All	High	City of Gautier; Jackson Count; Singing River Health	HMA	2022	(Action 4 in previous plan) Although some efforts have been made to harden critical facilities in the city, there are still many that are unprotected and vulnerable so the city will retain this action.
PP-4	Elevate/improve roads and bridges that are below base flood elevation.	Flood	High	Jackson County Road Dept.; Gautier Public Works	Local, State, Federal	2022	(Action 5 in previous plan) Many roads have been elevated above BFE in the city, but there are certainly some that have not and the city would like to work towards addressing those roads that are vulnerable to flooding.
PP-5	Relocate Emergency Operation Center for Gautier.	All	High	City of Gautier	HMA	2017	(Action 10 in previous plan) The city has not yet relocated its but this is still in the works and the city will continue to push forward with this action.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-6	Encourage use of underground utilities in higher elevation areas.	All	Moderate	Gautier and Jackson County Planning Departments	Internal	2022	(Action 11 in previous plan) The city has evaluated the use of underground utilities in areas that are high enough that those utilities will not be flooded. This is very location dependent, so the city will continue to implement where it makes the most sense in the future.
PP-7	Construct all new critical facilities and infrastructure with materials designed to minimize impacts from all hazards.	All	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 12 in previous plan) The city has attempted to build all new critical facilities up to a standard that will protect them as best as possible from hazard impacts. As new facilities are constructed, the city will continue to try to build to the best possible standard.
PP-8	Identify location for community safe rooms in Gautier and Jackson County to accommodate the remaining population not covered in the existing safe rooms.	All	High	Gautier City Council; Jackson County Board of Supervisors	HMA	2022	(Action 13 in previous plan) Several safe rooms have been identified across the city but these do not cover the entirety of the city population, so additional safe rooms will need to be identified.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-9	Acquisition/demolition of Severe Repetitive Loss Properties (SRL) and Repetitive Flood Claim (RFC) properties by continuing to apply for FMA to mitigate when practical.	Flood	High	Gautier and Jackson County Planning Departments	FMA	2022	(Action 19 in previous plan) The city has mitigated a number of repetitive/severe repetitive loss properties, but there are still a number of these types of properties that need to be mitigated so the city will keep this action in place.
PP-10	Raise lift stations and other critical infrastructure above base floodplain where feasible.	Flood	High	Jackson County Utility Authority; City of Gautier	Local	2022	(Action 22 in previous plan) Some lift stations have been raised above the BFE, but others have not and there is still significant critical infrastructure located in the floodplain. The city will look at ways to mitigate the impacts to this infrastructure in the future.
PP-11	Encourage existing and new developments to include surge and lightning protectors and use of enhanced construction materials.	Lightning	High	Gautier and Jackson County Planning Departments	Internal	2022	(Action 30 in previous plan) The city has encouraged developers to include surge and lightning protectors in new construction, but this has not always been implemented so the city will retain this action and continue to encourage this going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-12	Implement mast arm traffic signal improvements.	All	High	Gautier Street Division; Jackson County Road Department	Local	2022	(Action 31 in previous plan) The city has implemented mast arms at several intersections, but there are many where mast arms are still not in place so the city will continue to pursue this action going forward.
PP-13	Mount street signs to existing mast arm traffic signals.	All	High	Gautier Street Division; Jackson County Road Department	Local	2022	(Action 32 in previous plan) In many cases where mast arms are in place, street signs have been mounted to the mast arms, but as many intersections do not have mast arms, this action will need to be retained.
Natural Resource Protection							
NRP-1	Develop/maintain a beach erosion and renourishment program.	Erosion	Moderate	Gautier and Jackson County Public Works	Internal	2022	(Action 25 in previous plan) The city has implemented beach renourishment in many locations to reduce the effects of erosion, but since erosion is a continual process, this action will need to be retained going forward.
NRP-2	Acquisition of natural wetlands for City of Gautier land conservation. 32 acre parcel north of Singing River Mall to be used as Town Green)	Flood	Low	Gautier Planning Department	CIAP	Completed	(Action 34 in previous plan) The city has acquired the land north of Singing River Mall to be used as Town Green.
NRP-3	Land acquisition for City of Gautier City Park Community Center-Phase 1. Improvements to City Park along Mary Walker Bayou.	Flood	Low	Gautier Planning Department	Tideland Funding FY2010	Completed	(Action 35 in previous plan) The city has acquired the land for the City Park Community Center.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Structural Projects							
SP-1	Coordinate with applicable agencies on constructing new roadways and bridges above the base flood elevation.	Flood	High	Gautier Public Works, Jackson County Road Department	Local	2022	(Action 15 in previous plan) The city has worked with state and federal DOTs to try to ensure that new roadways and bridges are constructed above BFE, but this will need to be addressed as more roads are constructed in the future.
Emergency Services							
ES-1	Identify and prioritize portable generator hook ups or permanent mount units for wells, lift stations, and facilities.	All	High	Jackson County; City of Gautier; Jackson County Utility	HMA	2020	(Action 1 in previous plan) The city has identified a number of locations for portable generator hookup and has generally prioritized those locations. However, there are still additional locations where the city would like to make hookups available so this action will remain in the plan.
ES-2	Develop agreements/reprocess for providing tie-ins and back up water service for Jackson County Utility Authority and Gautier.	All	High	Jackson County Utility Authority; Gautier Public Works	Local	2017	(Action 7 in previous plan) The city has developed some agreements for backup water supply service, but will need to continue to manage those agreements and ensure that backup water supplies remain available in the event of a disaster.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
ES-3	Improve notification procedures of impending hazards and evacuation procedures.	All	High	Jackson County Emergency Management Agency	Local	2018	(Action 40 in previous plan) The city is consistently working on improving notification procedures for impending disasters, but there is still room for improvement and so the city will keep this action in place.
ES-4	Develop/update and conduct exercises on response procedures.	All	High	Jackson County and City of Gautier	Internal	2019	(Action 51 in previous plan) The city has developed and conducted a number of exercises on response procedures, but in order to remain on top of this sort of training, the city will plan to conduct additional exercises going forward.
ES-5	Increase evacuation route options and coordination of activation by working with state/federal agencies.	All	High	Jackson County Emergency Management Agency	Local	2020	(Action 53 in previous plan) Evacuation routes are identified for the city, but the city would like to identify additional routes that citizens can use to evacuate to speed the evacuation process overall.
ES-6	Improve signage/traffic control devices for evacuations.	All	High	Jackson County Emergency Management Agency	Local	2020	(Action 54 in previous plan) The city has experienced evacuations before and have provided both signage and traffic control. However, the city would like to improve both of these aspects of evacuations so this action will remain in the plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Public Education and Awareness							
PEA-1	Educate the public on all hazard preparedness.	All	High	Jackson County Emergency Management Agency	Local	2022	(Action 36 in previous plan) The city has put in extensive efforts to educate the public on all hazard preparedness, but this is a continuous process that needs to be constantly evaluated to ensure the public is aware of risks and actions they can take to reduce risk.
PEA-2	Educate the public on all hazard mitigation programs (safe rooms, wind retrofit, etc.).	All	High	Jackson County Emergency Management Agency	Local	2022	(Action 37 in previous plan) The city has worked on educating the public about hazard mitigation programs and successfully encouraged many citizens to mitigate their homes/businesses. Nevertheless, many citizens are still not fully aware of programs available to assist them, so the city will keep this action in place.
PEA-3	Educate the public about the benefits of flood mitigation of homes and businesses.	Flood	High	Jackson County Emergency Management Agency	Local	2022	(Action 38 in previous plan) The city has focused on flood mitigation education with many home and business owners as this is a major threat to the community. Given that flood programs, funding, and insurance are constantly changing, this action will stay in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-4	Continue to deliver programs to residents, business owners, and developers regarding best management practices for storm water control and household hazardous waste.	Flood, Hazardous Materials Incident	High	Gautier and Jackson County Planning Departments	Local	2022	(Action 39 in previous plan) The city has enacted several programs to help promote best practices for storm water control and household hazardous waste. However, many residents/businesses do not implement these practices so more education is likely required.
PEA-5	Develop education materials for water conservation.	Drought	High	Gautier and Jackson County Planning Departments	Local	2022	(Action 41 in previous plan) The city has some information for the public on water conservation, but overall there needs to be more emphasis on getting citizens to implement these measures in the future.
PEA-6	Promote Firewise program to homeowners, builders/contractors, and developers.	Wildfire	High	Gautier and Jackson County Fire Departments	Local	2022	(Action 42 in previous plan) The city has encouraged the use of the Firewise program on many stakeholder groups, but there are still many areas that would benefit from implementing more elements of the Firewise program so this action will be retained.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-7	Develop outreach strategies for non-English communities.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 43 in previous plan) The city has generally focused on English language outreach strategies, but with a growing population of non-English speakers, the city would like to put more emphasis on reaching those groups so it will focus on this action going forward.
PEA-8	Develop outreach strategies for tourists (i.e., part-time residents, RV campers, vacationers, etc.)	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 44 in previous plan) The city has tried to incorporate tourists into much of its planning, but outreach/education strategies aimed towards tourists are not as prevalent. This is an action the city will try to focus on in the future.
PEA-9	Develop outreach strategies for elderly and low-income residents.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 45 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the city will retain this action and try to provide extra focus on these populations.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-10	Develop outreach strategies for the physically challenged.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 46 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the city will retain this action and try to provide extra focus on these populations.
PEA-11	Develop outreach strategies for those with mental health disabilities.	All	High	Applicable state and federal agencies and local agencies/ associations	Local	2022	(Action 47 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the city will retain this action and try to provide extra focus on these populations.
PEA-12	Develop outreach strategies and implement school programs for children.	All	High	All school districts and daycare providers within the county	Local	2022	(Action 48 in previous plan) Outreach towards these vulnerable populations has been carried out in the past, but because these populations may need additional assistance in the event of a disaster, the city will retain this action and try to provide extra focus on these populations.

City of Moss Point Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Prevention							
P-1	Update Emergency Operation Plan.	All	High	Fire and Human Resources Departments	Budget	2018	(Action 2 in previous plan) The city's EOP has been updated in the past, but it is likely that a new update will be needed over the next 5 years, so this action will remain in place.
P-2	New water supply tank.	Drought	Moderate	Public Works Department	Budget as capital outlay project for Public Works	2020	(Action 5 in previous plan) The city has not acquired a new water supply tank due to lack of funding, so this action will remain in place.
P-3	Develop no burn ordinance.	Drought, Wildfire	Moderate	Fire Department	N/A or minimal	2018	(Action 6 in previous plan) The city has implemented a no burn restriction at several points when needed, but this action may need to be reviewed in the future to ensure that it is up to date.
P-4	Promote and implement conservation program (in coordination with developing emergency drought ordinance).	Drought	High	Fire Department and Building Inspection	N/A or minimal	2018	(Action 7 in previous plan) The city has promoted and implemented a conservation program, but this program will need to be updated so the action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Property Protection							
PP-1	Retrofit/361.	Hurricane	Low	Community Development	CDBG grant funding, city funding	2019	(Action 8 in previous plan) The city has worked to try to retrofit a number of structures to provide protection against wind and flood related hazards, but many structures are still vulnerable and would benefit from retrofitting, so this action will remain in the plan.
PP-2	Elevation of streets.	Flood, Hurricane, Severe Thunderstorm	Moderate	Public Works and Governing Body	Local	2022	(Action 10 in previous plan) Some streets in the city have been protected through elevations, but there are still many that have not, so this action will need to remain in the plan.
PP-3	Bridge replacement.	Flood, Hurricane, Severe Thunderstorm	Moderate	Public Works and Governing Body	Local	2022	(Action 11 in previous plan) Some bridge replacements have been carried out to provide less at-risk crossing in the city. However, the city still has some identified bridges that it would like to replace.
PP-4	Acquisition projects.	Flood, Hurricane, Severe Thunderstorm	Low	Community Development	HMGP, CDBG	2022	(Action 12 in previous plan) The city has participated in acquisition projects in the past, but there are still many properties could be acquired through voluntary programs to reduce overall hazard risk.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-5	Home elevation projects.	Flood, Hurricane, Severe Thunderstorm	Moderate	Community Development	CDBG Hazard Mitigation funding, city and county funding	2022	(Action 13 in previous plan) The city has participated in elevation projects in the past, but there are still many properties could be elevated through voluntary programs to reduce overall hazard risk.
Natural Resource Protection							
NRP-1							
Structural Projects							
SP-1	Drainage improvement projects.	Flood, Hurricane, Severe Thunderstorm	High	Community Development and Public Works	CDBG Hazard Mitigation funding, city and county funding	2018	(Action 14 in previous plan) The city has implemented some drainage improvement projects, but there are still a number of drainage related projects that the city would like to implement going forward so this action will remain in the plan.
SP-2	Scaling system.	Flood, Hurricane, Severe Thunderstorm	High	Public Works	CIAP Grant funding, city and county funding	2020	(Action 15 in previous plan) The city has not developed a scaling system, but it would still like to pursue this action going forward so it will remain in the plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Emergency Services							
ES-1	Evacuation routing and planning.	All	Moderate	Police Department	Seek/secure grant opportunities with MDOT, MS Public Safety Commission, etc.	2018	(Action 3 in previous plan) Evacuation routes have been identified by the city, but there is more planning for an evacuation scenario that needs to be completed to be fully prepared so the city will keep this action in place.
ES-2	Establish an effective early warning audio system (sirens).	All	Low	Police and Fire Department	Seek grant opportunities with MDOT, MS Public Safety Commission, etc.	2019	(Action 4 in previous plan) The city is still working to solidify its early warning system. Therefore, this action will be left in the plan to be pursued further going forward.
ES-3	Generator	Hurricane	High	Community Development Department	Budget and/or secure CDBG grant funding	2019	(Action 9 in previous plan) The city has some backup power generation capabilities, but the city feels it would still benefit greatly from extra generators if funding is available, so this action will remain in place.
Public Education and Awareness							
PEA-1	Public outreach: education and preparedness for all hazards.	All	High	Fire and Human Resources Department	Existing budget	2022	(Action 1 in previous plan) The city has made an effort to reach out to the public and provide education on the risks the community faces in terms of hazards. However, many citizens remain under-informed, so this action will remain in place.

City of Ocean Springs Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Prevention							
P-1	Coordinate with the Ocean Springs participants on Jackson County's Haz-Mat team to ensure the adequacy of the regional response strategy.	Hazardous Materials Incident	High	Fire Department	MS Dept. of Public Safety Planning	2022	The city has continuously coordinated with participants on the Jackson County HazMat team to ensure a regional response strategy to HazMat incidents. However, the need for continual support and coordination exists, so the city will leave this action in place.
P-2	Buildings above a certain elevation must have sprinklers for fire protection.	Wildfire	High	Buildings Department	Individual home and building owners	2022	The city has been working to implement a regulation to ensure that buildings above a certain elevation have sprinklers. The work of implementing this action is not complete, so the county will continue to work towards this goal going forward.
P-3	Include structural design, elevation, and location standards in the Unified Development Code to mitigate effects of natural hazards.	All	High	Planning and Community Development	Administrative – not revenue dependent	2020	To the best of its ability, the city has implemented structural design and location standards in its UDC. However, the city believes there are still improvements that could be made so this action will remain in place as the city will review its UDC in the coming years.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-4	Continue to require that development exceeds FEMA's require base elevations by a measure of one foot.	Flood	High	Buildings Department	Administrative – not revenue dependent	2022	The city has implemented a plus one foot of BFE requirement for elevation of buildings in the floodplain and in order to continue implementing this higher standard, the city will retain this action in the plan.
P-5	Continue to require lot elevation determination for structures in new subdivision through site plan review.	Flood	High	Buildings Department	Administrative – not revenue dependent	2022	The city has required lot elevation determination in the past for structures in a new subdivision and since this regulation has worked effectively, the county will retain this action in the plan as it continues to implement and review the status of the regulation.
P-6	Continue to enforce city's subdivision regulations for developments in flood hazard areas by enforcing flood ordinance and restricting development in floodplain.	Flood	High	Planning and Community Development; Buildings Department	Administrative – not revenue dependent	2022	The city has implemented subdivision regulations to ensure enforcement of the flood ordinance and ensure development in the floodplain takes place within a reasonable level of regulation. The city will continue to build on its existing subdivision regulations by implementing and working to improve them going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-7	Undertake an annual review of the Hazard Mitigation Plan with the assistance of the floodplain manager, building official, city planner, and EOC coordinator.	All	High	Planning and Community Development	Administrative – not revenue dependent	2017, Annually	The city has attempted to carry out annual reviews of the hazard mitigation plan and has been generally successful. Going forward, the city will keep this action in place as it aims to continue to undertake annual reviews of the plan.
P-8	Incorporated the Ocean Springs Hazard Mitigation Plan into the city's Comprehensive Plan.	All	High	Planning and Community Development; Planning Commission; Board of Alderman	Administrative – not revenue dependent	2022	The goals of the hazard mitigation plan have been incorporated into the city's Comprehensive Plan, but as this plan and the Comprehensive Plan are updated, additional effort to ensure up to date information will be needed.
P-9	Develop a Capital Improvements Plan (CIP) for the City of Ocean Springs.	All	High	Planning and Community Development; Public Works	MDA – Economic Development	2020	The city does not have a formal CIP, but it does have a program in place for spending on infrastructure. The city will continue to work on implementing this program and evaluating the development of a formal CIP.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-10	Maintain elevation certificates on all structures built after the adoption of new FIRM maps.	Flood	High	Buildings Department	Administrative – not revenue dependent	2022	Thus far, the city has maintained a database of elevation certificates for structures built after the adoption of new FIRM maps. However, as development continues, any structures located in the floodplain will need to have this data collected so this action will remain in place.
P-11	Continue to promote storm smart coasts through the Coastal Hazard Outreach Strategy Team (C-HOST) which brings together local officials, community stakeholders, private businesses, and major employers to coordinate messages and develop new projects with the guidance of building officials and floodplain managers from Ocean Springs, Pascagoula, Gautier, Bay St. Louise, Biloxi, D'Iberville, Gulfport, Harrison County, Long Beach, Pass Christian, and Waveland.	Hurricane, Storm Surge, Flood	Moderate	Buildings Department	FEMA, Sea Grant	2022	The city has participated with other local stakeholders and community officials on the C-HOST in the past and the city would like to continue to participate in this going forward, so this action will remain in the plan.
P-12	Enhance the city's Continuity Plan to ensure that emergency operations can function and that day-to-day management of the city can be back on track as soon as possible after an emergency.	All	Moderate	Fire Department	MS Dept. of Public Safety	2022	The city has developed a Continuity Plan to help ensure restoration of daily functions quickly after a disaster. However, there are many efficiencies that the city would like to build into its future iterations of the Continuity Plan, so this action will be carried forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-13	Maintain flood elevation certificates in the Buildings Department.	Flood	Moderate	Buildings Department	Administrative – not revenue dependent	2022	Thus far, the city has maintained a database of elevation certificates for structures built in identified flood zones. However, as development continues, any structures located in the floodplain will need to have this data collected so this action will remain in place.
P-14	Conduct regional beach clean-up programs to reduce the potential of damage from flooding and free-floating debris.	Flood	Moderate	MS Power	DMR, Sea Grant	2017, Annually	The city has participated in regional beach cleanup efforts to try to reduce damage from debris during a storm. These efforts must be carried out regularly, so this action will be kept in the plan.
P-15	Provide buffers between natural forest and urban development to protect against wildfire.	Wildfire	Moderate	Planning and Community Development	MS Dept. of Forestry, Gulf Islands National Seashore	2020	The city has worked in some areas to provide a buffer area between developed and undeveloped areas, but there are still areas of wildland urban interface that create risk for homes and businesses, so this action will be retained.
P-16	Study potential effects of sea level rise on near shore structures and infrastructure and prepare to adopt mitigation measures to minimize its effects.	Sea Level Rise	Low	Mayor's Office; Planning and Community Development	MS AL Sea Grant, COE	2022	Although some study of sea level rise inundation areas has been prepared to give an idea of risk areas, there is still additional study that needs to take place to fully understand the risk of sea level rise so this action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-17	Mandate larger setbacks from bayous and streams.	Flood	Low	Planning and Community Development	Administrative – not revenue dependent	2022	The city currently has some regulations in place regarding setbacks from bayous and streams, but by mandating larger setbacks, citizens would be more likely to be protected from flood events. Therefore, this action will remain in the plan.
P-18	Conduct regular controlled burns to limit fuel for forest fires in wet pine savanna habitats.	Wildfire	Low	Fire Department; MS Department of Forestry	MS Dept. of Forestry	2018	The city has worked with MS Forestry to conduct controlled burns on a regular basis to reduce fuel loads that contribute to forest fires. Although this has been successful, there is a continual need to monitor fuel loads and implement controlled burns so this action will remain in the plan.
Property Protection							
PP-1	Encourage the underground placement of electric, telephone, and cable TV lines by developers working outside of the coastal zone to improve aesthetics, prevent disfigurement of trees, and provide protection form high winds and other hazards.	Hurricane, Tornado, Severe Thunderstorm	High	Public Works Department; MS Power; Singing River Electric	MEMA - HMGP	2022	In some areas, the city has worked with utility companies to place utilities underground in areas where it is appropriate and these lines won't likely be affected by flooding. However, there are still areas where underground utilities would be appropriate and have not been placed, so this action will remain in the plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-2	New construction of city buildings should meet the 2012 IBC.	All	High	Buildings Department; Board of Alderman	MDA – Energy Efficiency Programs	2022	The city has worked hard to ensure compliance with the IBC in areas where new construction is taking place. As growth continues to take place within the city, officials will need to continue to implement this action so it will remain in the plan going forward.
PP-3	Inspect water wells and towers to ensure they are sufficiently strong to withstand high winds and storm surge.	Hurricane, Storm Surge, Tornado, Severe Thunderstorm	High	Water Department	DEQ, EPA	2022	The city has undertaken fairly frequent inspection of water wells and towers to ensure they are strong enough to withstand high winds and storm surge, but this inspection process needs to occur consistently as infrastructure may be aging or damaged after storm events. As such, this action will remain in place.
PP-4	Prepare lift stations for inundation and power outages by raising electrical equipment above the BFE in the event of storm surge and long-term power outages.	Hurricane, Storm Surge, Flood	High	MS Power; Public Works	Utility fees	2022	Some of the lift stations in the city have been raised above the BFE, but there are still a number of lift stations that need to be elevated to a higher level to be protected, so this action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-5	Mitigate properties in V and AE zones through acquisition.	Flood	Moderate	Mayor's Office; Parks Department	COE, MEMA-HMGP, MCIAP/ Army Corps of Engineers	2022	The city has utilized acquisition as a means of mitigation on properties in flood zones in the past, but there are still a number of properties located in flood areas that may be eligible for voluntary acquisition pending property owner interest. This action will remain in place.
PP-6	Protect transformers after a tropical storm or hurricane by washing down salt spray before power supply is re-engaged.	Hurricane	Low	MS Power; Singing River Electric; Fire Department	MS Power, Singing River Electric, Fire Department	2022	After storm events, the city has sprayed down transformers before re-engaging power supply. However, as this is an action that will need to be implemented again in the future, this action will remain in the plan.
Natural Resource Protection							
NRP-1	Preserve trees and vegetation on uninhabited properties to improve stormwater management/flood control.	Flood	Low	Parks and Public Works Departments	MDOT (MS Dept. of Forestry)	2022	The city has generally tried to preserve trees and vegetation on uninhabited properties to improve stormwater management, but there are still some significant steps the city could take to try to use trees/vegetation to its advantage and the city will continue to look at those options going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
NRP-2	Preserve natural/wetlands and riparian areas through acquisition or conservation easements.	Flood	Low	Mayor's Office; Grants Department	FEMA, Army Corps of Engineers/ MCIAP, MEMA-HMGP	2022	The city has used conservation easements and acquisition to preserve riparian areas and wetlands in the past, but it may look to use this tool in the future to expand areas or identify new areas for preservation. This action will remain in place.
NRP-3	Extend sand beach additional 100 feet to the east and stabilize with plantings.	Storm Surge, Erosion	Low	Planning and Community Development; Jackson County	FEMA Grant, DMR, COE	2020	Although efforts have been made to extend the sand beach already, the city will continue to evaluate extending the sand beach and stabilizing it with plantings to try to preserve the beach from eroding.
NRP-4	Request that Jackson County continue dune propagation in areas along East Beach and Front Beach.	Storm Surge, Erosion	Low	Jackson County	Jackson County Seawall Tax	2022	The city has worked with the county to propagate dunes to serve as a buffer along several beaches. Although this action has been undertaken in the past, it will need constant evaluation and review as the city continues to implement it going forward.
Structural Projects							
SP-1	Maintain the Jackson County seawall tax.	Storm Surge, Erosion	Moderate	Jackson County	Jackson County	2022	The city/county have implemented a seawall tax to help ensure the integrity of the seawall. This tax must be reviewed consistently so the action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
SP-2	Continue the city's efforts to upgrade drainage facilities along coastal roadways.	Flood	Moderate	Public Works and Streets	COE, MEMA-HMGP, MCIAP	2022	A number of drainage projects have been implemented along coastal roadways, but the city must continue to evaluate more potential projects and implement those to ensure proper drainage and avoid flooded roads. This action will remain in place.
Emergency Services							
ES-1	Maintain a hazardous materials, oil spill, and natural gas response force to address immediate aftermath of a material release.	Hazardous Materials Incident	High	Fire Department	AFG, SAFER	2022	The city currently has a HazMat response force in place, but to maintain this force, the city will need to provide proper training and staffing going forward. As such, this action will remain in place.
ES-2	Update the city's Hazard Mitigation and Emergency Response Plan and its Hurricane Response Plan to ensure emergency service and evacuation routes are adequate for demand, well-marked, and accessible to individuals with special needs during inclement weather.	All	High	Planning and Community Development Department; Fire Department	MEMA - HMGP	2018	The city is currently updating its HMP through this effort and will need to correspondingly update its ERP and HRP to ensure data is up to date. This action will remain in the plan.
ES-3	Maintain a reverse 911 call-back system for railroad derailments and other hazardous material spills.	Hazardous Materials Incident	High	Fire Department	MS Dept. of Public Safety Planning	2022	Currently the city works with MS DPS to ensure that a reverse 911 call-back system is in place. The city will review this system and continue to make sure that a reverse 911 call-back system is maintained to alert citizens of a HazMat incident.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
ES-4	Increase the number of fire department and police personnel trained to respond to hazardous waste releases on the railroad, highways, hospital, and other critical facilities.	Hazardous Materials Incident	Moderate	Buildings Department	FEMA, AFG	2012	Although a number of fire and police personnel in the city are trained in responding to HazMat incidents, the city would like to aim to have even more personnel trained in responding to these incidents as redundancy. Therefore, this action will remain in place.
ES-5	Complete Fire Station 4/EOC to shelter emergency personnel in place during a natural disaster.	All	Moderate	Fire Department	CDBG - Complete	Completed	The city has completed Fire Station 4/EOC, so this action is complete.
ES-6	Finish construction of shelter and multipurpose center at Gay Lemon property.	All	Moderate	Mayor's Office; Parks Department	MEMA - HMGP	Completed	The city has finished construction on the shelter and multipurpose center so this action is complete.
ES-7	Implement an early warning network to alert citizens to oncoming hazards.	All	Moderate	Fire and Police Departments	MS Dept. of Public Safety Planning, AFG	2022	The city has an early warning network in place to alert citizens of potential hazards, however, there are several ways that the city could improve its current warning system, so the city will retain this action.
ES-8	Establish high ground staging area for emergency vehicles that provides added protection from wind-blown debris.	All	Moderate	Fire and Police Departments	FEMA	2020	The city has not established a high ground staging area for emergency vehicles to protect from wind-blown debris, so this action will remain in the plan going forward.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
ES-9	As population grows to the east, southeast, and northeast, plan for the expansion of the city's firefighting capacity through an additional facility, possible on the Highway 57 corridor, including new fire trucks, personnel, and equipment.	All	Low	Fire Department	AFG	2022	The city is continuing to expand and may need a new facility in the future. This action has not been carried out but the city will continue to monitor population growth and act on this once it is required.
ES-10	Plan for the construction of an underpass to the railroad tracks at Halstead for emergency evacuation with a water pump to prevent groundwater flooding.	All	Low	Public Works Department	MS Dept. of Public Safety Planning, MDOT, DEQ, EPA	2022	This action has not been completed and so the city will continue to evaluate the situation on Halstead Road to determine if an underpass would be necessary.
ES-11	Upgrade fire protection through acquisition of a new fire truck capable of reaching new elevated buildings and construct a fire station large enough to accommodate it.	Wildfire	Low	Fire Department	AFG	2022	The city has not acquired a new fire truck of this capacity nor constructed an additional station. This action is not complete and will be carried over in the plan.
Public Education and Awareness							
PEA-1	Create partnership to assist with development of Family Disaster Plans.	All	High	Fire Department	Administrative – not revenue dependent	2022	The city has worked on providing citizens with information on its website to assist with creating Family Disaster Plans. However, there are ways that the city could be more proactive in promoting these plans, so the city will retain this action.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-2	Educate residents on how better waste disposal can reduce flooding.	Flood	Moderate	Public Works; Planning and Community Development	FEMA, Sea Grant	2022	The city has promulgated information to citizens about how better waste disposal can reduce flooding, but many citizens are still disposing of waste in inappropriate ways so additional outreach and strategies to improve disposal are required.
PEA-3	Provide outreach materials about mitigating the impact of a hazard through city mailings and raise the awareness of home and business owners.	All	Moderate	Mayor's Office; Buildings and Water Departments	FEMA, Sea Grant	2017, Annually	The city has provided outreach materials about mitigating personal property using mailings, but public outreach requires constant attention as new property owners move in and because many property owners need reminders about these activities.
PEA-4	Encourage small businesses to develop business continuity plans.	All	Moderate	Mayor's Office	MDA – Economic Development, FEMA	2018	The city has encouraged continuity plans for small businesses, but not all businesses have these developed so the city will continue to pursue this action.
PEA-5	Launch a coordinated education effort on hurricane evacuation procedures to teach people who should evacuate, when evacuation should begin, and routes available through Ocean Springs and the surrounding areas.	Hurricane	Low	Fire and Police Departments	FEMA, Sea Grant	2019	The city has worked on educating the public on evacuation procedures, but these efforts have not reached all residents and so the city will retain this action and continue to try to improve the education of citizens in this matter overall.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PEA-6	Participate in Gulf Coast Homeowner's Show and building supply store shows to provide mitigation information to the public.	All	Low	Buildings Department	FEMA, Sea Grant	2022	The city has participated in the Gulf Coast Homeowner's Show in the past and this is a critical event to continue to participate in going forward so the city will retain this action in the plan.

City of Pascagoula Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Prevention							
P-1	Update Emergency Response Plan.	All	Moderate	Fire	General Fund	2017, Annually	(Action 4 in previous plan) The city has updated its ERP on an annual basis in the past and would like to continue to do so going forward, so this action will be retained in the plan.
P-2	Adopt Local Hazard Mitigation Plan as part of Comprehensive Plan.	All	Moderate	Community and Economic Development Department	General Fund	2018	(Action 6 in previous plan) Once the HMP has been approved and adopted by the city, it will integrate it into the local comprehensive plan and adopt it as part of that plan.
P-3	Enhance enforcement of existing codes, ordinances, etc.	All	Moderate	Planning and Building	General Fund	2022	(Action 7 in previous plan) Currently, the city is enforcing its existing codes and ordinances, but there are certainly aspects of the code that could be enforced in better ways, so the city will continue to evaluate code enforcement going forward and work to improve it.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-4	Continued compliance with the NFIP/implementation of CRS Activities.	Flood, Hurricane, Severe Thunderstorm	Moderate	Planning and Building	General Fund	2022	(Action 11 in previous plan) The city is currently in compliance with all NFIP activities and is a participant in the CRS. However, as the city moves forward, it may try to improve its flood management/insurance activities to try to gain more points in the CRS.
P-5	Continue to participate in the Jackson County Stormwater Taskforce.	Flood, Hurricane, Tropical Storm, Severe Thunderstorm	Moderate	Planning and Building; Public Works	General Fund	2017, Annually	(Action 13 in previous plan) The city has participated in the Jackson County Stormwater Taskforce over the past several years and is planning to continue that participation in order to improve stormwater management in the city. Therefore, this action will remain in the plan.
P-6	Maintenance of existing drainage facilities.	Flood, Hurricane, Tropical Storm, Severe Thunderstorm	High	Public Works; Engineering	General Fund	2022	(Action 15 in previous plan) The city has put in great efforts to maintain its existing drainage facilities, but it will be looking for ways to improve those facilities going forward, so the action will be retained in the plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
P-7	Continue implementation of open space preservation.	Flood, Hurricane, Tropical Storm, Severe Thunderstorm	Moderate	Planning and Building	General Fund	2022	(Action 16 in previous plan) The city has taken many strides to retain areas of open space to improve overall stormwater management. However, as the city grows, there will be increasing demand for development and the need to consistently try to implement this action and retain open space in the community.
P-8	Continue citizens' hotline for drainage issues.	Flood, Hurricane, Thunderstorm, Erosion	High	Planning and Building; Public Relations	General Fund, HMGP grants	2022	(Action 18 in previous plan) The city created a citizens' hotline for drainage issues and it is still active. The city will look at ways to improve the hotline going forward and will continue this action.
Property Protection							
PP-1	Protect water wells, sewer systems, and ensure backup power.	All	High	Public Works	City Budget Utility Fund, Hazard Mitigation Grant funding	2020	(Action 5 in previous plan) The city has taken action to protect a number of water/wastewater/power facilities, but there are many that remain unprotected and so the city will keep this action in place as it attempts to address these facilities.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-2	Residential elevation.	Flood	High	Planning and Building; CRS Coordinator	HMGP, FMA	2022	(Action 8 in previous plan) The city has used elevation as a mitigation strategy on a number of properties in the past, but there are still many properties in the city that could benefit from this mitigation technique if found to be cost-beneficial. This action will remain in place.
PP-3	Property acquisition project.	Flood	Moderate	CRS Coordinator	HMGP and FMA Grant funds	2022	(Action 9 in previous plan) The city has used acquisition as a mitigation strategy on a number of properties in the past, but there are still many properties in the city that could benefit from this mitigation technique if found to be cost-beneficial. This action will remain in place.
PP-4	Mitigation reconstruction/ floodproofing.	Hurricane, Flood	Moderate	CRS Coordinator	HMGP or FMA Grant programs	2022	(Action 10 in previous plan) The city has used reconstruction and floodproofing as a mitigation strategy on a number of properties in the past, but there are still many properties in the city that could benefit from this mitigation technique if found to be cost-beneficial. This action will remain in place.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
PP-5	Structure hardening: upgrade roof systems/windows to meet current code requirements to ensure continuity of emergency services – Pascagoula Police Dept., Lake Avenue Fire Station, City Hall, and others.	Hurricane, Severe Thunderstorm/ High Wind, Hailstorm, Tornado	High	Planning and Building Department; Economic Development	General Fund; Hazard Mitigation Grants	2022	(Action 14 in previous plan) The city has used structure hardening as a mitigation strategy on certain critical facilities, but there are still many critical facilities in the city that could benefit from this mitigation technique if found to be cost-beneficial. This action will remain in place.
PP-6	Relocation and placement of utilities.	Flood, Hurricane, Tropical Storm, Severe Thunderstorm	High	Planning and Building; Economic Development; Public Works	HMGP funding, City of Pascagoula Utility Fund, state and federal grants, JCUA budget funding	2022	(Action 19 in previous plan) The city has tried to relocated existing utilities and place new utilities in low-risk areas, but there are still a number of utilities that are in higher risk areas, so the city will continue to try to identify those and implement relocation where feasible.
PP-7	Critical facilities inventory and mitigation opportunities.	All	Moderate	Public Works; Police; Fire; Parks and Recreation; Economic Development; Building and Planning; City Hall	HMGP and PDM Grants	2018	(Action 20 in previous plan) The city has included a critical facilities inventory in this plan, but there are still some facilities that have not been identified in geospatial format, so the city will continue to try to identify those facilities and mitigation opportunities for all facilities.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
Natural Resource Protection							
NRP-1	Natural resource protection – wetlands, others.	Flood, Hurricane, Severe Thunderstorm, Erosion	High	Planning and Building; Public Relations	General Fund, Hazard Mitigation grants, and other funded activities	2022	(Action 17 in previous plan) The city has worked with regional partners to try to increase the protection of natural resources such as wetlands, but the demand for development is likely to increase and so the city will retain this action to attempt to continue preserving natural resources.
Structural Projects							
SP-1	Implement projects from Master Drainage Plan.	Flood, Hurricane, Tropical Storm, Severe Thunderstorm	High	Public Works; Engineering	General Fund	2022	(Action 12 in previous plan) Some of the projects for the MDP have been implemented, but there are still many that have not so the action will remain in place.
Emergency Services							
ES-1	Coordination of evacuation planning and sheltering	All	Moderate	Pascagoula Police/Fire	General Fund, CDBG, HMGP funding	2017, Annually	(Action 2 in previous plan) On an annual basis, the city discusses evacuation plans with regional partners and sheltering areas. These plans will be reviewed in the coming years so this action will be retained.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2017)
ES-2	NIMS certification.	All	High	Fire/Police	Federal grant	2022	(Action 3 in previous plan) Many employees have taken NIMS courses and have helped enhance the capacity of the city overall. However, more training will be needed by new employees and to keep current employees up to date, so this action will remain in place.
Public Education and Awareness							
PEA-1	Public/stakeholder outreach: education and preparedness for all hazards.	All	High	Planning and Building; Public Relations	General Fund; Hazard Mitigation Grants	Mailing biannually, web and media constant	(Action 1 in previous plan) The city has used mailings as the primary means for reaching out to the public and educating them on hazard risk, but the city will want to look to provide information through new and different technological formats going forward. Therefore, the city will retain this action as it evaluates the best methods for outreach.
PEA-2	Provide post-disaster guidance materials.	All	Moderate	Planning and Building	Existing budget	2022	(Action 21 in previous plan) The city has developed post-disaster guidance materials that it has available to the public and has distributed to some degree, but there are areas where improvement could be made to the material so this will likely be updated going forward.